QK495
.F280
N87
1841

Transactions Amer. Philos Soc. (n. ser) vol 7

1841

D. Eaton

This Memoir has been used in Torr & Gray's Flora vol II.

L.C.

## ARTICLE XX.

*Descriptions of new Species and Genera of Plants in the natural Order of the* COMPOSITÆ, *collected in a Tour across the Continent to the Pacific, a Residence in Oregon, and a Visit to the Sandwich Islands and Upper California, during the Years* 1834 *and* 1835. *By Thomas Nuttall. Read Oct.* 2, 1840.

### Tribe I. VERNONIACEÆ.

VERNONIA **sphæroidea*, pubescent; leaves lanceolate, serrate, beneath villous; corymb compound, many-flowered, flowers small; involucrum subglobose, scales short and equal, tomentose and reflected.—HAB. Prairies of Arkansas.

OBS.—Remarkable for the reflection of the scales of the involucrum, which are all short, equal, and densely tomentose at the base and margins.

*Vernonia Arkansana*, (DECAND.) nearly smooth and herbaceous; leaves linear-lanceolate, very long, serrulate; corymb simple; flowers large, nearly all pedunculate, hemispherical; leaves of the involucrum lanceolate, terminating in very long, filiform, leafy, and spreading points.—HAB. Plains of Arkansas, near Red River.

OBS.—Remarkable for the great size of the heads of flowers, more than twice as large as in any other of our species, and also singular in the great length of the squamose points of the leaflets of the involucrum, which are a little pubescent. The leaves are very long, narrow, and smooth. Achenium somewhat pubescent. Pappus double, as usual.

MISSOURI BOTANICAL
GARDEN LIBRARY

## Tribe II. EUPATORIACEÆ. (Lessing, Decand.)

### LIATRIS.

*Liatris brachystachya.* (NUTT.) Arkansa; also in the prairies of Missouri, common. *Liatris pychnostachya?* MICH. Vol. II., p. 91.

*Liatris oppositifolia* (NUTT.) is a species of Eupatorium.

*Liatris virgata,* (NUTT.) nearly smooth; root tuberous; stem often paniculately and virgately branched; the flowers sometimes upon short, but usually on long pedicels; involucrum subhemispherical; fifteen to twenty flowered; scales oval, nearly all equal and imbricate, somewhat acute or obtuse; pappus rather short, slightly plumose; receptacle naked, or bracteolate.—HAB. In the pine forests of Georgia, and near Newbern, N. Carolina. Very peculiar in its great tendency to branching; the branches slender. Leaves linear, sublanceolate, not remarkably unequal; erect, or reflected; smooth, or somewhat ciliated. One specimen, which I cultivated at Cambridge, Mass., had a *bracteolate receptacle,* with a foliaceous scale to each floret; in this individual the leaves were reflected,

I give the following apparently new genus of VERNONIACEÆ, allied to Vernonia, collected by the late Doctor Baldwin on some part of the Pacific coast of South America, and from its curious honey-combed receptacle, I have called it

### * SYMBLOMERIA.

Capitulum many-flowered, homogamous; the florets tubular and deeply five-cleft, with linear obtuse segments, the exterior series subpalmate. Receptaculum pitted with angular cavities like a honey-comb, in which the turbinate villous achenium is almost wholly immersed, (as in Baldwinia.) Involucrum hemispherical, imbricate, and somewhat squarrose, in several unequal series, the scales adnate at their base. Stigmas with the branches filiform and pubescent, acuminate. Pappus double, and, in several series, the outer whitish and much shorter, all paleaceously bristly.—A shrub eight or ten feet high, with alternate, lanceolate, acuminate, entire, smooth leaves; capituli rather large, axillary and terminal, pedicellate and corymbose (florets apparently white, judging by the dried specimen.)

*Symblomeria Baldwiniana.*

A branching shrub with terete somewhat cinereous puberulous branches and young shoots. Leaves about three inches long, an inch to an inch and a half wide, acuminate at each end. Capituli a little larger than those of *Vernonia noveboracensis.*

and usually ciliate at base, with the leaves of the involucrum more obtuse. Others, differing in no other external character, had a *naked* receptacle! The *Carphephorus pseudoliatris* of Cassini is, then, nothing more than a true Liatris; and I therefore retain the name I gave to the Alabama specimens, of *Liatris squamosa;* but it may, perhaps, with others, form a section CARPHEPHORUS, to which, however, our plant cannot be referred, as the chaff-bearing plant is scarcely even a permanent variety.

*Liatris *lævigata*, root tuberous; in every part very smooth; radical leaves, long and linear, with smooth margins; stem somewhat attenuated, with very short, almost filiform leaves; involucrum filiformly pedicellate, smooth, of about two series of obovate, acute, coloured scales; florets about five, or more; pappus short, barbellate; achenium villous.—HAB. In Florida and Georgia.—Allied to the *L. gracilis* of Pursh, but the capituli are not at all globose, nor the pedicels spreading, but erect, and without any proper bractes. Stem three or four feet high, attenuated, and sparingly scattered with almost filiform, subulate leaves; radical ones near a foot long, pungently acute and coriaceous.

*Liatris resinosa* of Decandolle is apparently the *L. punctata* of Hooker, as the pappus is merely scabrous, or barbellate, in *L. resinosa.* The *L. punctata* appears intermediate with *L. squarrosa* and *L. cylindracea.*

*Liatris heterophylla* appears, usually, to have the stem pubescent, and not smooth.

Subgenus.—* LEPTOCLINIUM. *Suffruticose, branching; leaves opposite; capitulum attenuated at the base; receptaculum very small. Achenia acutely conic, ten to twelve striate. Pappus barbellate, elongated in several series, and, as well as the florets, purple.*

*Liatris fruticosa*, (NUTT.) suffruticose; leaves opposite, above alternate, smaller, cuneate-oblong, entire; branches corymbose, naked towards the summit; capituli coarctate.—HAB. Collected in East Florida by Mr. Ware. Capituli in smallish terminal clusters, upon slender pedicels; sepals lanceolate, acuminate, loosely imbricate in about three series, the innermost much the longest; florets

purple, as well as the pappus, which is as long as the florets. Corolla wider at the summit, rather deeply cleft.—The habit of this singular species is much more that of *Kleinia* or *Eupatorium* than that of Liatris, with which, however, the flowers best agree.

EUPATORIUM.—Section I. CYLINDROCEPHALA. (Decand.)

*Eupatorium * calocephalum;* herbaceous, somewhat scabrous and pubescent; leaves opposite, narrow-lanceolate, oblong, denticulate, three-nerved and sub-petiolate; flowers paniculate, corymbose; capituli cylindric-ovate; involucrum closely imbricate; scales three-striate, oblong-obtuse, the innermost purple; florets fifteen to twenty.—*Liatris oppositifolia*, (NUTTALL,) in Silliman's Journal, Vol. V., p. 299. A species so remarkably distinct from the other group of the United States as to have led me into the error of referring this species to the genus *Liatris:* better specimens have now proved it to be an *Eupatorium* of Decandolle's first section. The stem somewhat scabrous, slender, twiggy, and herbaceous, about two feet high, the upper branchlets terminating in trichotomous flowering corymbs. Each capitulum pedicellate; scales of the involucrum chaffy, striate, and with a coloured, slightly foliaceous tip, mostly purple; florets scarcely exserted; pappus short, slightly scabrous; achenium smooth, five-striate. Receptacle naked.

*Eupatorium occidentale, β. subroseum.* In the Rocky Mountains, toward the waters of the Columbia, and in the Blue Mountains of Oregon.

*Eupatorium Oregonum*, slightly scabrous; leaves opposite, above alternate, petiolate, ovate, acute, entire; corymb sub-coarctate, few-flowered; involucrum twelve to fifteen flowered, scales almost in a simple series, acute, pubescent; achenium five-striate.—HAB. In the Rocky Mountains, towards the sources of the Malade of the Oregon. Nearly allied to the preceding. A very dwarf species, about six inches high. Leaves about an inch long, somewhat three-nerved. Flowers pale pink.

BULBOSTYLIS. (Decand.)

*Bulbostylis * microphylla;* suffruticose low, viscidly pubescent, villous and much branched; leaves alternate, ovate, subserrate, on the branches numerous

and small, nearly entire; panicle few-flowered, subfastigiate; capituli pedicellate; scales of the involucrum linear lanceolate, acuminate; pappus white.—HAB. On the shelving rocks of the Blue Mountains of Oregon.

OBS.—A very remarkable species. Perennial, forming rigid dwarf suffruticose tufts of very branching stems, scarcely a foot high, viscid, with a bitter, highly aromatic resin. The larger leaves roundish-ovate, about an inch long, those on the branches and upper part of the stem (as in some Asters) diminishing to a fourth of that size, and numerous. Involucrum ovate, squarrose at base. Flowers white?

## BRICKELLIA. (Elliott.)

EUPATORIUM, but with the involucrum ovate, or hemispherical, of several series of loosely imbricated, usually striated scales, the inner scariose, the lower spreading, with subulate leafy points. Florets ten to fifty. Achenia subcylindric, with ten striæ. Pappus pilose, barbellate, or scarcely scabrous. Receptacle naked.—Leaves opposite, and alternate above. Corolla purple or white. Flowers corymbose, or clustered.

Section I. EUBRICKELLIA.—*Involucrum squarrose at base; the scales with four prominent striæ on each.*

*Brickellia cordifolia*, (ELLIOTT,) leaves opposite, cordate, acuminate, dentate, triply-nerved, pubescent beneath, above alternate; corolla and pappus more or less purple; achenia pilose above.—HAB. In Georgia.

*Brickellia grandiflora*, leaves alternate, deltoid-cordate, acuminate, incisely dentate towards the base, entire at the point, smooth on both surfaces, and covered beneath with resinous atoms; flowers in fastigiate clusters, the upper part of the stem branching; inner scales of the involucrum linear-lanceolate, acute; pappus white, achenia smooth.—*Eupatorium? grandiflorum.* HOOK. Flor. Bor. Am., Vol. II., p. 26.

HAB. In the Rocky Mountain range, by streams, in gravelly places, and west, to the lower falls of the Columbia.—Perennial. Stems many from the same root, about twelve to fifteen inches high. The whole plant almost perfectly glabrous. Leaves alternate, sometimes almost opposite, approximate, on longish petioles, deltoid-cordate, acuminate, coarsely and deeply toothed to-

wards the base, smooth and green, but shining, with a coating of yellow resinous atoms having a heavy aromatic scent; stem branching above; branches terminating in corymbulose clusters of subsessile flowers, about five capituli in each. Florets straw-yellow, inclining to white, cylindric and smooth, the border connivent. Stigmas exserted, smooth, thicker toward the extremity. Achenium cylindric, ten-striate. Pappus of a single series of twenty to twenty-four scabrous hairs. Receptacle naked, flat.

*Brickellia *oblongifolia*, leaves alternate, oblong-lanceolate, acute, nearly all entire, scabrous, viscid, and shortly pubescent; stems subdecumbent, branched above; flowers corymbose, subsessile; inner scales of the involucrum long, linear, and acute; pappus barbellate, white, twenty to twenty-four rayed.—HAB. Gravel bars of the Columbia and tributary streams, and along the Wahlamet, common.

OBS.—Perennial, viscid, aromatic and heavy-scented; many stems from the same perennial root, scarcely a foot high. Involucrum at length spreading out flat, the inner sepals longer than the long, almost plumose, pappus. Lower sepals lanceolate, a little spreading. Receptacle naked. Achenium cylindric, ten-striate, somewhat pubescent. Florets thirty to forty, yellowish, narrow and inconspicuous; stigmas but little exserted, thickened at the extremity, and smooth.—Flowery in August and September. Apparently a species of *Clavigera*, but the achenium is pubescent, and deeply ten-striate.

## NARDOSMIA. (Cassini.)

*Nardosmia palmata*, leaves reniform-cordate, unequally seven-lobed, incisely toothed; female liguli minute, stigma bifid. *Tussilago palmata*, (AIT.)—HAB. Maine.

*N. *Hookeriana*, leaves cordate, not very deeply palmately lobed, the divisions angular and toothed, beneath tomentose. *N. palmata!* HOOKER. Bor. Am., Vol. I., p. 308. WILLD. Sp. Pl. l. c., PURSH in part. DECAND, Vol. V., p. 206, not of Aiton. Closely allied, if, indeed, sufficiently distinct from *N. corymbosa*.

*Nardosmia *speciosa*, dioecious, flowers and leaves coeval; leaves cordate-reniform, circular, about nine-lobed, not deeply cleft, divisions angularly toothed

and mucronately denticulate, beneath more or less tomentose; scape tall, with numerous leaf sheaths; thyrsus many-flowered, smooth.—*N. palmata?* Hooker. —Hab. Shady forests of the Oregon and Wahlamet, by streams.—May. A very showy species; easily confounded with the true *N. palmata*, though wholly distinct, being a larger plant, with the leaves more numerously lobed, and not so deeply cleft. Leaves a foot high, six or more inches across, the outline circular, with denticulations as well as angular indentions. Thyrsus eighteen inches to two feet high, fastigiate. In the female, the capituli twenty to twenty-five, large and conspicuous; the liguli white, exserted, very numerous, linear-oblong, the style filiform and undivided! pappus white, moderately copious.—Quite an ornamental species, with fragrant flowers.

### ADENOCAULON. (Hooker.)

*Adenocaulon *integrifolium;* primary leaves ovate, or subelliptic, the rest deltoid or subcordate, nearly entire, almost all radical.—Hab. Shady woods of the Wahlamet, near its confluence with the Oregon. A smaller species than the *A. bicolor*, which it greatly resembles, but the leaves are not lobed, the cordate ones only are a little repand at times near the base. Perhaps not sufficiently distinct from the *A. Chilense.*

## Tribe III. ASTEROIDEÆ. (Less.)

### Subtribe Asterineæ.

### CORETHROGYNE. (Decand.)

Capitulum radiate, many-flowered, the rays sterile, in one series, destitute of achenium and pappus; discal florets tubular, shortly five-toothed, glandular. Sepals of the involucrum similar, imbricated in three to five series, more or less herbaceous and reflected at the points. Receptacle flat, alveolate, and naked. Branches of the stigma exserted, filiform, terminated by hirsute tufts of pubescence. Achenium turbinate, silky. Pappus of unequal length, in several series, scabrous.—Perennial herbaceous plants of Upper California, tomentose; stems branching; branches one or few-flowered, fastigiate; leaves

linear entire, the radical and lower ones spathulate, serrate towards the apex. Liguli conspicuous, purple; disk yellow. Pappus rufous. Allied to *Heterotheca*, but with the rays neuter, the pappus simple, and the flowers heterochromous.

*Corethrogyne* **incana*., arachnoidly tomentose, leaves oblong-lanceolate, or linear, acute, amplexicaule, nearly entire; branches slender, one or few flowered, fastigiate; involucrum viscidly pubescent, of about four series of acute sepals, the lower ones squarrose; rays about twenty, as long as the disk.—Hab. Near St. Diego, Upper California. Flowering in May. Rays of a fine, light bluish purple. Stems numerous, about twelve to eighteen inches long, very leafy, branching above; branches slender, one to three-flowered; lower leaves somewhat three-nerved. Capitulum about the size of the common Daisy; the involucrum viscid, and sometimes the extreme branchlets; sepals linear-lanceolate. Rays tridentate, without any distinct germ or pappus. *C. Californica?* Decand. *Diplopappus incanus*, Lind. *Aster? tomentellus?* (Hook. and Arn. Bot. Beechy.) With the heavy aromatic odour of some *Gnaphaliums*.

*Corethrogyne* * *filaginifolia*, arachnoidly tomentose, radical leaves spathulate, serrate, those of the stem linear, or spathulate, acute, entire, sessile; branches one-flowered, fastigiate; involucrum in about three series of lanceolate, very acute, erect sepals; rays twenty to twenty-four, bidentate, scarcely as long as the disk. *Aster? filaginifolius.* Hook. and Arn. Bot. Beech.—Hab. Around St. Barbara, Upper California.

Obs.—A smaller flowered, more slender species than the preceding, with a smaller and not viscid involucrum, the leaves more whitely tomentose.—In neither of these species have we observed any paleæ on the receptacle, as described by Decandolle, and, in consequence, they were referred to Aster by Hooker and Arnott.

## ASTER. (Linn.)

*Aster* **Andinus*, root-stock slender and creeping; stems several, decumbent, above pubescent, mostly one-flowered; leaves entire, smooth, radical spathulate, sublanceolate, cauline sublinear, acute, usually wider at the base and amplexicaule; scales of the involucrum linear, nearly smooth and mostly acute,

ciliate; rays numerous, rather long, three-toothed; achenium nearly smooth.—Hab. On the highest summits of the Rocky Mountains, near the line of perpetual snow, in 42°. About ten thousand feet above the level of the sea. Near the summit of Thornberg's Ridge, where we made an ineffectual attempt to cross the Northern Andes, in August, still deeply buried in snow. Allied apparently to the *A. repens* of Humboldt and Bonpland.

Root perennial, creeping, wiry and slender, sending up small clusters of decumbent stems, three or four inches high, each mostly terminating in a single capitulum, about half the ordinary size of that of *A. alpinus*. Radical leaves very smooth, and somewhat coriaceous, rarely with two slight denticulations, stem leaves three or four, lanceolate-linear, amplexicaule and acute, usually somewhat ciliate. Capitulum hemispherical, involucrum of two series of narrow linear acute, herbaceous sepals, strongly pubescent on the margin, rather shorter than the disk. Rays feminine, about forty, narrow linear, mostly three-toothed, purplish-blue. Pappus scarcely scabrous, purplish; the hairs slender.—Flowering in August. In one specimen the leaves are longer, sublanceolate, slightly serrulate, and the sepals more acute.

*Aster* **glacialis*, stem erect, one-flowered, pubescent above, rather naked; leaves entire, smooth, somewhat three-nerved, the primary ones spathulate-oblong, the rest lanceolate, acute, scabrous on the margin, cauline small, very acute, amplexicaule; involucrum of nearly a simple series of linear, acuminate, glandularly pubescent, brownish sepals; rays rose-purple, three-toothed; pappus barbellate; achenium pubescent.—Hab. With the preceding, which it much resembles.—Root perennial, not creeping, the stock rather thick and undivided. Leaves wholly smooth, except the scabrous margin, after the first spathulate ones, acute, attenuated below; stem often as naked as a scape. The calix quite viscid; the sepals much acuminated, of an uniform brown and herbaceous colour, about the length of the disk. Rays oblong, broader and shorter than in the preceding, about forty, somewhere about equal with the disk. Pappus paler, much shorter than in the preceding, and distinctly barbellated.

*Aster* **integrifolius*, stem pubescent, simple, erect, and with the involucrum glutinous above; leaves entire, radical lanceolate, long petiolate, all acute; cauline oblong-lanceolate, scabrous, pubescent on the margin, dilated and amplex-

icaule at the base; capituli large, subcorymbose, about three to five, on short and nearly naked peduncles; involucrum loosely imbricated, sepals nearly equal, linear-lanceolate, acute, somewhat spreading; achenium rather villous.—An alpine species growing with the above, but at a lower elevation. Root creeping; stem robust, about a foot high; terminating in a short raceme, or small corymb, glutinous pubescent above, as well as the sepals, which are leafy. Lower leaves spathulate-lanceolate; those on the stem few and rather remote, the lowest nearly half a foot long, the uppermost scarcely an inch, and cordate-lanceolate, amplexicaule; one or two small leaves on the peduncle, which is scarcely an inch long; leaves of the involucrum about equal with the disk, about two series. Rays bluish-purple, as long as the disk, fifteen to twenty-five, the terminal capitulum much larger. Pappus brownish, scabrous, rather long and abundant.—Flowering in August. Evidently allied to Pursh's *A. peregrinus*, but the stem is pubescent below and viscid above, and the leaves amplexicaule.

*Aster *pauciflorus.* Involucrum hemispherical, sepals very viscid, acuminate, nearly equal, about two series, foliaceous, and somewhat spreading; rays few, pale purple. A genuine alpigenous Aster, no Tripolium. Allied to the preceding, but a small, slender plant. *Tripolium pauciflorum*, (Nees.) —In the Herbarium of the Academy of Natural Sciences, Philadelphia.

*Aster *denudatus*, stem erect, at length almost scapiform, pubescent above; radical leaves lanceolate or spathulate, rarely subdenticulate, smooth and coriaceous, scabrous on the margin, ciliate at base; stem leaves very small, linear-lanceolate, amplexicaule; branchlets usually one-flowered, fastigiate, forming a wide corymb; involucrum short, imbricate, outer sepals foliaceous, oblong, obtuse, the inner somewhat acute; achenium nearly smooth, acute at base.—Hab. In arid and dry grassy plains in the Rocky Mountains, near Lewis' River, about latitude 42°, not uncommon. Root creeping. Stem twelve to sixteen inches high, clothed more or less to the base with small leaves; branches of the corymb elongated, leafy, mostly one-flowered, margins of the leaves very rough, ciliate with minute hooked bristles; radical leaves mostly lanceolate, on the suckers spathulate and obtuse. Capituli about the size of those of *Erigeron alpinum*. Involucrum shorter than the disk. Rays rose-purple, thirty to forty. Pappus bright brown, scabrous. Achenium compressed, a little pubescent, almost stipitate at the base!

*β.* **ciliatifolius*, leaves distinctly ciliated, stem not denuded and scapiform, leaves more proportionate, upper part of the stem pubescent; sepals of the involucrum similar, brownish, ciliate and subacute.

Hab. With the above; probably a distinct species, but my specimens are not satisfactory.

*Aster ramulosus.* Lind. in Hooker, Flor. Bor. Am. II., p. 13. Common in the Rocky Mountain region, along the plains of Lewis' River. Flowers pale purple. Radical leaves lanceolate, entire, attenuated into long petioles. It bears not the most distant affinity with *A. biennis*, (*A. incanus*, Ph.,) which, in fact, resembles Amellus more than Aster, and constitutes a distinct genus.

*Aster* **campestris*, somewhat minutely and viscidly pubescent, leaves linear-oblong, subacute, entire and amplexicaule, obscurely three-nerved, radical, lanceolate serrulate; capituli in narrow racemose panicles, the branches mostly one-flowered; involucrum spreading, viscid, the sepals linear and very acute.

Hab. With the above, which it closely resembles, but differs in being every where somewhat pubescent and viscid, with a strong scent, and particularly in the distinctly veined, serrulate radical leaves, and the obtuse, instead of the attenuated extremities of the stem leaves. Stem about a foot high. Achenia nearly smooth; pappus brownish, scabrous.

*Aster* **bracteolatus*, stem pulverulently pubescent, leaves linear or oblong-linear, acute and sessile, entire, radical. . . .; flowers racemosely paniculate, branches leafy, mostly one-flowered; involucrum smooth and leafy, spreading; sepals oblong, somewhat acute, the lower series similar with the branch leaves.

Hab. With the above, to which it is nearly allied, but remarkable by the smooth leaf-like involucrum. The radical leaves are unknown; flowers lilac-purple, rather large. Stem and branches much more leafy than in the two preceding; the leaves nearly all similar.—July.

*Aster Douglasii.* Common in inundated tracts, and along the low banks of the Columbia and Wahlamet. Scarcely distinct from some of the varieties of *A. Novi-Belgii*, or *A. luxurians*, though in a large collection, that of the Schweinitzian Herbarium, I find nothing exactly similar.—Flowering in August and September.

*Aster* **asperrimus*, minutely hairy and very rough; stem elongated, subdecumbent, terminating in a few-flowered corymb; leaves entire, nearly similar, oblong, obtuse, amplexicaule, lower ones spathulate; branches long and leafy, the lateral one-flowered; the capituli large; involucrum loosely imbricate. squarrose; rays elongated; achenium pubescent.

Hab. In Georgia, (Dr. Baldwin and Leconte,) near Chapel-Hill, North Carolina, (Schweinitz.) —A remarkably distinct species, diffusely subdecumbent, with slender wiry stems and branchlets, terminating in one or a few (three to five) large capituli, very similar to those of *A. surculosus*, near which it ought to range. Exceedingly rough, (particularly when dry,) with minute, tuberculate, hooked bristles. Rays large, and of a purplish-blue. The inner leaves of the involucrum somewhat viscid at the tips.

*Aster* * *amethystinus*, pubescent; stem usually erect, villous, racemosely paniculate, many-flowered, branchlets subfastigiate; leaves entire, lanceolate-linear, acute, auricularly dilated and amplexicaule at base; involucrum loose, or squarrose, the sepals acute or acuminate; achenium villous; rays numerous, azure.

Hab. In Massachusetts, near Cambridge and Salem; rare. A well marked and ornamental species, somewhat allied to *A. graveolens*, intimately to *A. Novæ-Angliæ*, but from which it is entirely distinct, the flowers not half the size, pale blue, very numerous, and disposed in a panicle, &c.

*Aster graveolens*, suffruticose, divaricately branched, minutely and viscidly pubescent; leaves oblong-lanceolate, amplexicaule, entire, very acute, radical ones narrowed at the base; branches usually one-flowered, fastigiate; involucrum squarrose, loose, leafy; sepals linear-lanceolate, acuminate; achenium smooth, ten-ribbed.

Hab. On shelving rocks, near the banks of the Arkansa; also on the banks of Kentucky River, near Lexington, (Dr. Short.) On comparing the plants anew, I find the present and following from Missouri, distinct species.

*Aster oblongifolius*, herbaceous, stem, and linear-oblong, obtuse leaves minutely scabrous, amplexicaule; stem divaricate, flowers fastigiate; involucrum foliaceous, loose; sepals linear-oblong, acute.

Hab. Banks of the Missouri, in arid, argillaceous and denudated places. Not viscid or strong-scented, as in the preceding, to which, at the same time, it is much allied.

*Aster* **Sayianus*, stem simple, terminating in a leafy corymb, above, and branchlets with the involucrum glandularly pubescent; leaves crowded, lanceolate, acuminate, distantly serrulate, amplexicaule, and scabrous on the margin, those of the branchlets ovate, entire; sepals of the involucrum spreading, nearly equal, acuminate; capitulum hemispherical, the rays blue; achenium smooth, ten-striate.

Hab. In the forests of the Rocky Mountains and the Oregon plains. Nearly allied to *A. modestus*, and proximately to *A. Novæ-Angliæ*.

Obs.—About a foot high; stem below minutely pubescent. Leaves about three inches long, less than an inch wide, scabrous towards the margin, elsewhere nearly smooth and rather shining. The corymb composed of fastigiate, mostly one-flowered, (sometimes two or three,) leafy branchlets; occasionally, from luxuriance, the branchlets are more compound, producing a rather irregular corymb; the points of the leaves long, and very acute; sepals about two series, nearly equal, herbaceous and viscid. Rays styliferous, rather numerous and narrow, pale blue. Pappus whitish, moderate, scarcely scabrous. Achenium almost perfectly smooth, compressed, ten-striate. This species has much the habit of a Galatella.

*Aster * ciliatus*, branches one-flowered, fastigiate; leaves entire, linear-oblong, acute, above lanceolate, very scabrous and ciliated on the margin, above nearly smooth, beneath minutely hairy and hirsute; involucrum foliaceous; leaflets lanceolate, very acute, margined with long ciliæ; achenium smooth.

Hab. In Louisiana, v. s., in Mr. Durand's herbarium, of Philadelphia. Closely allied to *A. montanus*, with the same achenium, but the upper leaves lanceolate, and the pubescence at variance with the section to which it belongs.

## TRIPOLIUM. (Nees.)

With the flower of Aster, but the involucrum erect, of two unequal series of oblong or ovate, obtuse, short sepals. Achenium compressed, margined, nearly smooth, without striæ, with a minute basal circle of bristles. Flowers corymbose. Obs.—To this genus, properly restricted, nothing yet belongs but the *T. vulgare*. (*Aster Tripolium*, Lin.)

Subgenus (or, perhaps, more properly a section of Aster.) *Astropolium.

With the flower of Aster. Sepals of the involucrum mostly subulate, or acute, imbricated loosely in several unequal series, more or less herbaceous. Pappus slender, scarcely scabrous. Achenium nearly smooth, compressed, four or five striate.—Smooth, divaricately branching herbs, mostly with entire, narrow, or subulate, somewhat fleshy leaves. Growing commonly in saline soils or alluvial grounds.

*Tripolium flexuosum*, sepals lanceolate, subulate, very acute, scariose, erect; stem low and flexuous, stem leaves subulate.

Hab. Along the sea coast, New Jersey, &c.

*Tripolium* **Oregonum*, stem rather tall, flexuous, and divaricately branched; cauline leaves long, linear, sublanceolate, nearly equal, acute, entire, scabrous on the margin; sepals linear-lanceolate, imbricate, slightly acute, herbaceous; rays narrow.

Hab. On the inundated banks of the Wahlamet; flowers very inconspicuous, somewhat fastigiate.

*Tripolium* **divaricatum*, stem rather naked, slenderly and divaricately branched; radical leaves spathulate, or lanceolate, subdenticulate; stem leaves above, very short and subulate, clasping; sepals subulate, acuminate, scariose, imbricate, and somewhat equal; achenium smooth, with four striæ.

Hab. Inundated banks of the Mississippi, and in Louisiana, not uncommon. Very smooth, the radical leaves thick, flowers rather conspicuous, rays blue. Remarkable for its divaricate and naked branches. A plant very similar occurs on the coast of Cuba.

*Tripolium* **occidentale*, stem nearly simple, few-flowered, flowers large and corymbose; leaves all linear, subulate amplexicaule, here and there incisely serrate; involucrum loosely imbricate; sepals subulate, subherbaceous, nearly equal; rays as long as the disk, (pale blue;) achenium nearly smooth, scarcely striate, compressed.

Hab. By the margins of muddy ponds in the Rocky Mountains, seven thousand feet above the level of the sea. Root creeping, slender; stem slender, four inches to a foot high, often only one or two-flowered, seldom more than five or six. Leaves long and narrow, linear, entire, or with one or two pair of deep, incise serratures, almost approacing to a pinnatifid division; branchlets slender, one-flowered. The flower as large as a daisy, with a simple series of pale blue, or pink rays. An alpine species, approaching the true Tripolium in the fruit being almost destitute of striation.

*Tripolium* **frondosum*, stem much branched, leaves linear, entire, amplexicaule, rather obtuse; capituli fastigiate; sepals linear-oblong, loose and leafy, rather obtuse; rays numerous, very small and slender; achenium nearly smooth, about four-striate.

Hab. By muddy ponds in the Rocky Mountains, near Lewis' River of the Shoshonee; rare. Growing partly in the water and mud. Apparently biennial, succulent, with very inconspicuous flowers, and an entirely leafy, nearly equal involucrum of about two series of leaflets.

*Tripolium subulatum.* Allied to the preceding by its numerous small rays. Achenium slightly pubescent, compressed, with five striæ.

*Tripolium conspicuum*, also comes in this section; remarkable for the great inequality of the sepals, which are coloured at the tips. Achenium scarcely compressed, pubescent, very slenderly five-striate.

*Tripolium *imbricatum;* like the preceding, but with the long, linear, amplexicaule leaves distantly serrulate; branches somewhat corymbose; involucrum turbinate, closely imbricated in four series of acute, oblong sepals, pale below, and coloured or herbaceous at the tips; rays narrow and short. Achenium subcylindric, five-striate.

Hab. In Chili, near Valparaiso, (Dr. Styles.) Allied to the preceding, but with a very different involucrum and much larger capitulum.

## *XYLORHIZA.

Capitulum radiate, rays feminine, fertile, the liguli in one series, rather large, toothed at the point; florets of the disk five-toothed, hermaphrodite, fertile. Apex of the stigma conic-lanceolate, narrowed. Involucrum widely hemispherical, sepals nearly equal, herbaceous, imbricated loosely in two series, acuminated, the inner ones with membranaceous margins. Receptacle flat, alveolate. Achenia subterete, silky, not marginated. Pappus of several series, unequal, scabrous.—Herbaceous subalpine plants, with woody roots, sending out numerous dwarf, simple stems, terminating in one, or a small corymb of large flowers. Leaves linear, entire; disk yellow. Ligulæ rose-coloured, or pale purple.—(So called from ξυλον, *wood*, and ριξον, a *root*. The root only being woody.)

Obs.—Allied to *Calimeris*, which it represents, differing somewhat in habit, and wholly in the fruit. From *Aplopappus* it differs in its heterochromous flowers, and more slender, not paleaceous pappus, as well as in habit.

*Xylorhiza *glabriuscula;* base of the stem and primary leaves only pubescent; leaves oblong-linear, or lanceolate-linear, acute, coriaceous; peduncles solitary or corymbose, three to five; sepals lanceolate, much acuminated.

Hab. In arid, argillaceous tracts in the Rocky Mountains, and on rocks toward the sources of the Platte. Flowers large, the rays pale rose-colour. Root thick and stout, woody, sending up clusters of low, simple stems, terminating in one to five flowers; leaves about two inches long, two

lines wide; rays oblong, slightly three-toothed; peduncles short and naked. Stem about a span high. Pappus bright brown, barbellated.

*Xylorhiza *villosa*, softly villous; leaves oblong-linear or sublanceolate, mucronulate; stem mostly one-flowered; sepals of the involucrum lanceolate, very acute, nearly all equal; flowers large.

Hab. With the above, but less abundant. Very similar to the preceding; root equally large and woody. Flower as large as that of the garden marygold. Rays wide, and longer much than the disk, pale red. Involucrum pubescent, nearly equal. A showy plant, well deserving of cultivation. Achenia very silky, as in the preceding.

## *EUCEPHALUS.

Capitulum radiate, styliferous rays, fertile; liguli of one series (seven to fifteen;) hermaphrodite florets of the disk fertile. Stigma slender, filiform, acuminate, nearly smooth. Involucrum ovate, imbricate, of three or four series of nearly similar ovate, carinated scales. Receptacle flat, alveolate, fimbrillate. Achenia angular, pubescent (or smooth in *C. alba.*) Pappus about two series, scabrous, simple and clavellate.—Herbaceous perennials with nearly simple stems, the summit, or the fastigiate branches, corymbose. Leaves entire, the radical rarely serrulate. Disk yellow. Liguli pale purple or white.—Plants with the habit of *Galatella*, and the pappus of *Sericocarpus*. (The name alludes to the elegant appearance of the calyx.)

### † *Achenia pubescent, flowers purplish.*

*Eucephalus *elegans;* minutely scabrous; stem attenuated; leaves all entire, linear-lanceolate, sessile, acute, the lower three-nerved; flowers in a short, unequal, contracted corymb; sepals purplish, ovate, acute, one-nerved, pubescent on the margin; rays purplish, about six or seven.

Hab. Oregon plains and the Blue Mountains of the west. Flowering from September to October.—A very elegant species, with a stout ligneous root, sending up a cluster of simple stems, two to three feet high, thickly clad with erect leaves, becoming smaller towards the summit, one to two inches long, by a quarter to half an inch wide, scabrous towards the margin; branchlets about an inch long, one-flowered; capituli eight to twelve in number. Involucrum of four series of very elegant, purplish, ovate, acute, appressed, carinated scales, conspicuously pubescent along the margin. Rays three-toothed, about six to seven, rather narrow and distant, pale purple; tubular

florets fifteen to twenty. Pappus exserted beyond the involucrum, as long as the florets, of two kinds, one bristly, the other clavellate, or wider towards the extremity. Receptacle alveolate, alveolæ with elevated, lacerated margins, much more distinctly so than in any *Sericocarpus*.

### † † *Achenia smooth, flowers white.*

*Eucephalus albus*, leaves lanceolate linear, scabrous on the margin, remote, entire, radical ones denticulate, lanceolate; corymb few-flowered; rays fourteen to fifteen, white.—*Chrysopsis alba*, NUTT. Gen. Am., Vol. II., p. 152. *Heleastrum album*, DECAND., Vol. V., p. 264. Certainly not a congener with *H. paludosum*, which (notwithstanding the variation of pappus) is a true Aster. Involucrum of three series of greenish carinated scales.

### † † † *LAGATEA.—*Inner scales of the involucrum longer; pappus scarcely clavellate.*

*Eucephalus glaucus;* smooth and glaucous; leaves linear-oblong, acute, subamplexicaule, entire; stem branching above; flowers racemose, corymbose: scales of the involucrum oblong-ovate, obtuse.

HAB. Towards the sources of the Platte, and in the Rocky Mountains. Rays purplish, narrow, about fourteen. Pappus slender, nearly or wholly equal; tubular florets, about fifteen to twenty. Flowers fastigiate, but sometimes racemose on the branchlets. Stem twelve to eighteen inches high. Leaves two to three inches long, smooth and somewhat coriaceous, reticulately veined, a little scabrous on the margin, less than half an inch wide. Scales of the involucrum about three series, the innermost longer, thin and acute.

*Eucephalus *ericoides;* a small alpine, cæspitose plant, canescently hirsute and glandular, with appressed short hairs; leaves subulate, minute, channelled, ciliate and acute, almost imbricately approximate, erect; branching from the base, branches one-flowered; rays white, about fifteen; achenia smooth.

HAB. Towards the summit of the Rocky Mountains. Collected by Dr. James. *Inula? ericoides*, TORREY, Lyceum Nat. Hist., N. York, l. c. *Chrysopsis ericoides*, EATON'S Manual, l. c. About four or five inches high, with leaves about the size of those of *Juniperus virginiana*, and nearly as much imbricated as the younger leaves of that tree, about a line long and half a line wide, white, with appressed hairs, nearly smooth on the upper side and pointed with a bristle, the lower ones strongly ciliate. Involucrum ovate, campanulate, imbricated in two unequal series of appressed, lanceolate, acute scales, membranous on the margin. Rays apparently white, or purplish, with exserted, filiform, smooth stigmas. Stigma in the discal florets pubescent. Pappus of rather few, scarcely scabrous, slender white rays. No double pappus.

## *DIETERIA.

Flower radiate, rays styliferous, fertile? liguli one or two series, broadish, those of the disk hermaphrodite, fertile. Stigma filiform, hirsute and exserted. Sepals of the involucrum, for the most part, closely imbricated in two to four series, scariose and carinate, the tips usually reflected and herbaceous. Receptacle flat or convex, alveolate, the alveolæ deep, with toothed and lacerated margins. Achenium obovate, subcylindric, ten to fifteen striate, pubescent. Pappus of several series, scabrous and unequal, that of the ray shorter and less copious.—Annual or biennial, (in one anomalous species perennial,) divaricately branching herbs, more or less pubescent; leaves nearly entire, incisely serrate or pinnatifid, the points often pungently mucronulate. Flowers fastigiate. The disk yellow. Liguli red or purple.—Allied to *Aster*, but with the involucrum regular; the achenia convex, distinctly striate when ripe; the receptacle deeply alveolate; the pappus of the ray different from that of the disk; the leaves incise or pinnatifid, and the duration only to the first period of flowering. They are also allied to the first section of *Heterotheca* by the deficient pappus of the ray, but that of the disk is simple, and the rays are purple. The whole plant bitter to the taste.—(So called from their biennial duration.)

† *Involucrum subovate, of three or four series of scales.*

*Dieteria canescens;* leaves entire, linear, sessile, radical spathulate; stem low and much branched, canescently villous, as well as the involucrum; flowers fastigiate; rays about eighteen to twenty; pappus very slender.

Hab. On the denuded banks of the Missouri. *Aster canescens*, Pursh, Bor. Am., Vol. II., p. 547. Not in the least allied to *Aster multiflorus*. *A. biennis*, Nutt. Gen. Am., Vol. II., p. 155. I doubt if the leaves are always entire, a fact so contrary to all the rest of the genus to which it is, in all other respects, so intimately allied.

*Dieteria *pulverulenta;* minutely pubescent, leaves linear sessile, below here and there incisely serrulate, above entire; stem divaricate; flowers fastigiate, upon rather naked branchlets; involucrum almost hemispherical; rays eight to twelve.

Hab. Arid plains towards the sources of the Platte. Rays short, pale purple, obscurely toothed, almost entire. Nearly allied to the preceding. Scales of the involucrum about three series, acute.

*Dieteria *divaricata;* pulverulently pubescent, radical leaves spathulate or lanceolate, repandly and incisely serrate, above smaller, linear, sessile and nearly entire; stem divaricate, branchlets subracemose, or one or two flowered, fastigiate; sepals about four series, reflected; rays twelve to sixteen, about as long as the disk.

Hab. Denudated plains of the Rocky Mountains, and Oregon, common. Rays short, pale blue or purple. Pappus fulvous or white, (the white shorter and less copious, perhaps the mark of a different species;) branches rather naked, with small leaves spreading out into a compound corymb. About a foot high.

*Dieteria *viscosa;* pulverulently pubescent, and more or less glandular and viscid; leaves all linear or lanceolate-linear, pinnatifidly or incisely serrate, acuminate, uppermost entire, sessile; stems simple, racemosely and corymbosely branched; scales of the involucrum acute, reflected at the tips, imbricated closely and equally in about five series; rays eighteen to twenty, about as long as the disk.

Hab. With the above, particularly near Scott's Bluff, on the Platte. Rays longer than in the preceding, purple. Stem simple, attenuated, often very viscid, and exhaling the strong, heavy scent of *Aster graveolens* or *Gnaphalium Americanum*. Scales of the involucrum very numerous, lanceolate, acute. Leaves sometimes nearly pinnatifid or runcinate. Pappus fulvous, that of the discal florets about thirty-five to forty unequal rays, that of the radial female florets much shorter. of about twenty-four rays.

*Dieteria *sessiliflora;* viscidly pubescent; stem simple, flowers sessile, in axillary and terminal clusters; leaves linear or sublanceolate, incise or subpinnatifid, acutely acuminate, sessile; sepals in about four series; rays *ochroleucous*, twelve to fifteen, about the length of the disk.

Hab. With the above. About a foot high, stem mostly unbranched, scales of the involucrum very glutinous. Nearly allied to *Aplopappus spinulosus*, (Decand.) to which I applied the name of *Sideranthus* in Fraser's catalogue; that plant is, however, perennial. Closely allied to the preceding species, but differing much in the pale *yellow* rays; the pappus of the rays is, also, nearly equal with that of the discal florets. Flowers smaller than in any of the preceding.

†† *Root perennial. Flowers wholly yellow.* (Sideranthus.)

*Dieteria spinulosa. Aplopappus spinulosus.* Decand. Vol. V., p. 347. This spe-

cies, though with yellow flowers, ought to find place in this genus, rather than the polymorphous one of Aplopappus, to which it is not allied.

Subgenus.—Pappochroma. Annual or biennial. Capitulum hemispherical. Receptacle nearly naked. Involucrum loosely imbricated, of about three series of nearly equal, narrow sepals, spreading towards the points. Pappus of the disk and ray equal. Achenium obovate, villous, with fifteen striæ. Rays purple, longer than the wide disk. Leaves pinnatifid and bipinnatifid.

*Dieteria *coronopifolia;* pubescent and viscid, branching from the base, branches fastigiate one-flowered; lower leaves bipinnatifid, the upper pinnatifid. *Chrysopsis coronopifolia*, Nutt., in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 34.

Hab. From the Platte to the sources of the Missouri, and throughout the Rocky Mountain tract, in arid, denudated places, by streams. Flowering from July to August. A very showy and ornamental plant, with hemispherical heads nearly as large as the garden marigold. Sepals linear-lanceolate, acuminate, nearly equal, scarious and cartilaginous towards the base. Rays eighteen to twenty, wide and long, of a fine red purple. Achenia turgid, rather large; stem about a foot high, somewhat spreading.

## SERICOCARPUS. (Nees.)

Obs.—Pappus unequal, scabrous, the longer rays clavellate. Liguli short and few.

*Sericocarpus rigidus. β. *lævicaulis*, leaves cuneate-oblong, or spathulate; rays shorter than the pappus.

Hab. Round Fort Vancouver, common. Leaves usually obtuse.

*Sericocarpus *Oregonensis;* leaves lanceolate-oblong, entire, and, as well as the involucrum, glandular beneath, above scabrous; stem smooth, corymb compound; inner scales of the involucrum acute; rays longer than the pappus.

Hab. With the above, which it much resembles, but appears taller and stouter. Stem attenuated. Pappus distinctly scabrous, the inner row obviously clavellate, less distinctly so in *S. rigidus*. The discal florets are also exserted beyond the pappus. Stigmas filiform, acute, nearly smooth, glandular. In both these species the pappus is unusually long and silky white.

*Sericocarpus Collinsii.* With the whole aspect and pubescence of *S. tortifolius*, but the leaves cuneate and serrate at the summit. Scales of the involucrum fewer. *Aster Collinsii*, Nutt. East Florida. (Mr. Ware.)

Obs.—Aster *gracilis* is a true Aster, nearly allied, indeed, to *A. surculosus* and *A. spectabilis*. The receptacle is naked, the achenium nearly smooth, with five striæ, scarcely, however, compressed; the pappus, pale brown, is scabrous, but not thickened. The floral rays are long and blue; the involucrum at length somewhat squarrose.

Heleastrum, (notwithstanding the slight difference of pappus,) ought, I think, to be reunited with Aster. The achenium is quite similar to that of *Aster gracilis*, to which section, and *A. surculosus*, it evidently belongs.

Biotia. We have but two well marked species. Of *B. corymbosa* I have seen two varieties, which insensibly lose themselves in each other, on an extensive comparison, in nature as well as in the herbarium. The *B. commixta* is the *corymbosa*, when grown in dry or rocky situations; in moist grounds the heart-shaped leaves are best developed. The lowest leaves in *B. commixta* are also cordate.

The *B. glomerata* appears to be a species, though it approaches *B. commixta*. In the herbarium of the Academy of Natural Sciences of Philadelphia it is marked by Mr. Schweinitz under the name of *Aster thyrsoideus*, and was obtained near Bethlehem, in Pennsylvania. It is distinguished by the shortness of the rays and the brevity of the pappus.

## GALATELLA. (Cassini.)

§ *Calianthus.—Liguli in one series, styliferous, elongated; discal florets tubular, five-toothed, hermaphrodite. Receptacle naked, flat, and punctate. Involucrum short, imbricated, sepals unequal, herbaceous, narrow and acute, in about three series. Stigmas exserted, clavate, pubescent, in the ray filiform. Achenium obovate, subcylindric, smooth and glandular, with seven to eight strong striæ, or ribs; pappus copious, slightly scabrous.—Perennial plants of wet marshes, more or less scabrous; leaves entire, lanceolate, crowded, glandular punctate; corymb of few flowers, the branchlets almost naked, like peduncles and squamose, the scales gradually passing into those which compose the very regular involucrum. Rays lilac or reddish.—Nearly allied, in habit to *Diplopappus linariæfolius*, less so to *Aster*, from

which the achenium differs; also to *Calotheca*, but wholly different in the involucrum and pappus. Of the true *Galatella* we have no species. In our section the flowers are larger, fewer, and scarcely corymbose.

*Galatella nemoralis*, Nees. Ast. 173. Decand. Prod., Vol. V., p. 257. *β. rubella*, smoother, with narrower leaves, a pink red flower, and a white pappus.

Hab. In sphagnose swamps, from New England to Canada. *β.* Quaker Bridge, New Jersey. Flowering in September.

*Galatella graminifolia.* Hook. Flor. Bor. Am., Vol. II., p. 15. *Aster graminifolius*, Pursh, Flor. Bor. Am., Vol. II., p. 545. I have not had an opportunity of examining this plant, but, from its near affinity to the preceding, believe it to belong to the present section.

## DIPLOPAPPUS.

*Diplopappus alpinus;* cæspitose and low; stems simple, one-flowered, villous, many from the same root; leaves sessile, erect, crowded, entire, oblong, apiculate, scabrous, with a cartilaginous margin; upper part of the stem terminating in a naked peduncle; involucrum villous; scales very acute; rays numerous, longer than the disk. *Chrysopsis alpina*, Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 34.

Hab. In dry prairies along the borders of Flat-Head River, in the Rocky Mountains. Flowering in June. A very elegant and distinct alpine species, still proximately allied to *D. linariæfolius*, of which it has the purple flower. Stems three to four inches high. Flowers large. Leaves oblong and linear-oblong, smooth, but very scabrous, rigid. Involucrum rather short and loose, of about three series of linear-lanceolate, appressed scales, membranaceous on the margin. Pappus scabrous, copious, the external crown white. Achenia silky villous.

## TOWNSENDIA. (Hooker.)

*Townsendia sericea;* cæspitose; leaves narrow linear, acute, scarcely half a line wide, canescently sericeous; capituli sessile on the caudex; scales of the involucrum numerous, very narrow and acuminate.—Achenium as in the rest of the genus, obovate, margined, and flatly compressed, sericeous, with a numerous connate series of white, silky pappus, almost plumosely barbellate, and remarkably attenuated above.

Hab. On the Black Hills, (an alpine chain toward the sources of the Platte.) Flowering probably in April. By the achenium, this genus makes some approach to *Calimeris*, though totally unlike in habit.

*Townsendia *incana;* whitely canescent; many-stemmed, cæspitose; leaves linear-spathulate, somewhat acute, scales of the involucrum lanceolate, ciliate: pappus of the rays short.

Hab. With the above. Flowering in June. Stem very short, depressed and dichotomous. Flowers sessile. Rays pale lilac. Florets numerous. Pappus of about twenty-four almost plumose rays, connected together in a ring, broad below, and attenuated gradually above. Rays about twelve; three-toothed, with a short, nearly equal, barbellate pappus, similar to that of the hermaphrodite florets, except its shorter length. Stigmas of the rays slender, filiform, smooth, of the tubular slightly five-toothed discal florets included, lanceolate, a little hirsute, (as in *Aster.*) Achenium flat and margined, thinly clothed with glandular hairs.

## Subgenus.—* Urophorus.

*Pappus of the rays and disk equal, acuminate, and plumosely barbellate, connected into a ring above the base, deciduous.—Perhaps a genus?*

*Townsendia *spathulata;* cæspitose, many-stemmed, canescently and softly tomentose; leaves spathulate obtuse; scales of the involucrum lanceolate-oblong. fimbriate.

Hab. With the above. Perennial, like all the preceding, also equally cæspitose, with the leaves in dense clusters, forming circular tufts; the flowers, also, equally solitary and sessile. The whole dwarf plant has much the aspect of the one-flowered variety of *Gnaphalium supinum;* flowers very inconspicuous; the capitulum almost imbedded in the clustered leaves. The leaves are broader than in the preceding, the liguli but little longer than the pappus, and scarcely exserted beyond the involucrum. Achenia oblanceolate, margined, slightly pubescent on the disk, and usually naked by the escape of the deciduous pappus, which is not the case in any of the preceding. Though the habit is wholly similar, the present plant probably constitutes an allied genus. By the pappus and achenium this small tribe of Asteroideæ seem to approach the Carduineæ.

## Subgenus.—* Nanodia.†

With the rays infertile or neuter, flat and exserted, usually three-toothed. Pappus of the infertile ray very short, even; that of the discal florets scarcely deciduous. Receptacle flat, alveolate-punctate, fimbrillate. Achenium com-

† In allusion to its dwarf appearance.

pressed, flat, oblanceolate, marginate, the disk glandularly pubescent.—Dwarf alpine annuals, with depressed, divaricate stems, branching from the base. Strigosely and canescently pubescent; leaves linear, entire. Flowers sessile, terminal, somewhat corymbose, large for the size of the plant. Involucrum imbricate, scales lanceolate, membranous on the margin, which is lacerately ciliate. Rays longer than the disk, lilac, or rose-purple. Sometimes presenting a rudimentary style, but the achenium always imperfect.

*Townsendia *strigosa;* stem depressed, branching from the base; flowers fastigiate, subcorymbose; leaves linear-spathulate, much attenuated below; sepals lanceolate-ovate.

Hab. On the Black Hills, (or eastern chain of the Rocky Mountains,) near the banks of the Platte.—Flowering in June. Rather softly strigose, with short, appressed, whitish hairs. From two to four inches high, the branches spreading, dividing usually into a sort of leafy corymb of sessile flowers, from one to five on a forked branch. Capitulum the size of the common daisy, with much the aspect of an *Aster*, but the sepals all erect, closely imbricated, broadly membranous and lacerate on the margin. Rays twelve to fourteen, rose-red; discal florets pale yellow. Stigmas acuminate, somewhat pubescent, scarcely at all exserted.

*Townsendia *grandiflora;* stem canescent, divaricately branching from the base, branches one or few-flowered, leaves linear-sublanceolate, very acute, nearly smooth, or minutely pubescent, green; capitulum hemispherical; involucrum of three series, the sepals lanceolate, filiformly acuminate, minutely fringed; rays twenty-eight to thirty, or more, bidentate.

Hab. With the preceding, which it resembles wholly in habit, but with the flower as large nearly as that of the China Aster, (*Callistephus Chinensis.*) Branching from the base, and spreading out sometimes from six to ten inches along the ground. Leaves linear, much attenuated below, and very acute, when green rather succulent, and appearing smooth, though somewhat pubescent beneath, (seen through a glass.) Sepals elegantly imbricated, perfectly lanceolate, much acuminated, scariose, except the centre, which is green, the margin minutely lacerate-ciliate. Rays pale lilac, longer than the disk.—A plant which well deserves cultivation, from its large, showy flowers.

## ERIGERON. (Linn.)

§. *Pappus mostly single, or with the external, very minute, rays numerous.*

*Erigeron glabellum.*—Rocky Mountain plains. Radical leaves sometimes more or less serrate. Pappus rather long and persistent, single, of about twenty-

four slightly scabrous rays. Capituli sometimes as many as nine. The peduncles and upper part of the stem, from the smallness of the leaves, appearing almost naked. More or less puberulous.

*Erigeron purpureum.*—Oregon and Upper California, common.

*β. *attenuatum;* stem elongated and slender towards the top, very hairy at base; radical leaves spathulate-lanceolate, dentate; flowers white, the rays not much longer than the disk.

Hab. In Oregon and Arkansas Territory. Flowers white, and smaller than in *E. purpureum*, the whole plant more hairy. Perhaps a species.

*Erigeron pumilum.*

Hab. Rocky Mountains of the Platte. Stems one to four-flowered, heads fastigiate. Pappus single, of about twenty rays.

*Erigeron *bellidiastrum,* ⊙; stem leafy, corymbosely branched, hirsute; leaves entire, linear-oblong, sessile, scabrous on the margin, attenuated below, the radical ones slender; involucrum hemispherical, sepals lanceolate acute; rays about the length of the disk.

Hab. On the borders of the Platte, within the Rocky Mountains. About a foot high, the leaves thickish and rather smooth, one to two inches long, two to four lines wide. Rays pale red, about as numerous as in the common daisy, rather short. Pappus simple, very deciduous, of about ten rays! The natural situation of this species is in the section *Olygotrichium*, but the pappus is simple; and hence it appears that the pappus does not define the natural limits either in this or many other genera of Compositæ.

*Erigeron *cæspitosum;* cæspitose, hirsute, and almost canescent with short hairs; stems decumbent, many from the same root, mostly one-flowered; leaves linear-sublanceolate, somewhat obtuse, those on the stem sessile, all entire; sepals lanceolate acute; rays longer than the disk; achenium elongated, smooth.

Hab. On the summits of dry hills in the Rocky Mountain range, on the Colorado of the West. Flowering in August. Nearly allied to *E. Andicola.* Equally hirsute, with close white hairs. Leaves about one and a half to two inches long by two lines wide, those of the root clustered: on the slender low stems few; stems occasionally two-flowered; involucrum short and hirsute. Rays forty to fifty, rather wide, often three-toothed, white or pale rose. Pappus simple, of about twenty scabrous, slender bristles. An alpine species, with the flower as large as a daisy.

§. † *Rays of the capitulum not very numerous, pappus mostly simple.*
(ASTEROIDEA.)

*Erigeron *filifolium;* canescently villous and somewhat hirsute; root woody, sending up many low, erect stems; leaves long and filiform, flowers corymbose, white; sepals acute, short; floral rays about twenty-five; achenia smooth. *Diplopappus filifolius?* (HOOK. Flor. Bor., Vol. II., p. 21,) but the rays are not yellowish.

HAB. In the Rocky Mountain range, in Oregon. Stems about eight to twelve inches. Leaves two to three inches long, narrow as those of the pine, on the young or infertile branches crowded. Rays about the length of the disk, few. Pappus simple, the bristly rays about twenty-five. Allied to *E. Montevidense*, but not shrubby.

*Erigeron radicatus.* HOOKER, l. c.

HAB. Blue Mountains, Oregon. A very dwarf, almost cæspitose species, with a short hirsute involucrum, and very short, white rays. Pappus simple, of about ten to twelve, very slender, scarcely scabrous bristles.

*Erigeron *nanum;* dwarf and hirsute, leaves linear subspathulate, stem one-flowered, nearly naked; sepals lanceolate, hirsute; rays white, shorter than the disk; achenium pubescent; rays of the pappus barbellate, about fifteen.

HAB. In the Rocky Mountains. Resembles the preceding, but has hirsute leaves, and a different achenium and pappus.

*Erigeron *pedatum;* smooth, cæspitose; primary leaves simple or trifid, afterwards pedate, unequally five-cleft; petioles elongated, strongly ciliate; scapes numerous, one-flowered; capitulum small, sepals acuminate, linear, a little hirsute; rays about the length of the disk; achenium pubescent.

HAB. On the gravel bars of small streams to the east of Walla-Walla, in Oregon. Nearly allied to *E. trifidus*, but very glabrous, and somewhat succulent; the flowers, also, numerous, and less than half the size, with the involucrum nearly smooth. Rays pale rose. Achenium somewhat sericeous; pappus of about twenty very slender, almost entire rays.

† † *Rays rather few, pappus double in ray and disk.*

*Erigeron *corymbosum;* minutely pubescent, somewhat canescent; many stems from the same root, erect and low, terminating in a few-flowered corymb; leaves lanceolate-linear, sessile, entire and acute; sepals hispid, acute; rays blue, a little longer than the disk, (about thirty;) achenium nearly smooth, and striate.

Hab. Rocky Mountains, towards the Oregon. A very elegant and peculiar species, bearing some affinity with *E. speciosum.* Covered with a short, dense, pubescence, and with the margins of the leaves scabrous. Stem six to eight inches high. Corymb of three or four capituli. Pappus brownish, the exterior of white and slender paleæ.

*Erigeron * decumbens;* somewhat glabrous below; root creeping; stem leafy, somewhat decumbent, many from the same root; leaves long and linear, acute, scabrous on the edge, attenuated below, the upper ones somewhat pubescent; flowers in a corymb; branchlets one-flowered, slender, and often leafy; sepals acuminate, hirsute; rays white, about fifty, twice as long as the disk; external pappus minute.

Hab. With the above, of which, at first glance, it appears a variety, but differs in the numerous rays and minute external pappus, as well as general habit.

*Erigeron * ochroleucum;* subcæspitose; stem pubescent above; radical leaves linear-sublanceolate, entire, crowded, smooth, those of the stem narrower, short, and sessile; stems one-flowered, scapoid or corymbose, and few flowered, the branchlets long; sepals tomentose, canescent, lanceolate, acute; rays numerous, about the length of the disk, (ochroleucous,) achenium pubescent.

Hab. Plains of the Oregon. August. Allied to the preceding, but with much larger flowers and rays; remarkable for the clustered root leaves, which, in the scapoid variety, resemble a tuft of pine leaves, ordinarily three to four inches long, by about a line wide, smooth and thick, much like those of an *Armeria.* Stem about a span, branchlets three to five, one-flowered, forming, in stout plants, an irregular corymb. Rays of the pappus, in both ray and disk, very obviously double, the external ring white and shining, internal, of about fifteen bristles.

*Erigeron * foliosum;* rather hirsute and somewhat scabrous; stem simple, erect, terete, attenuated, the summit corymbose; leaves oblong-linear, sessile, entire, acute, crowded; sepals lanceolate, pubescent, acute, in about two series, and nearly equal; rays short, red, about thirty, achenia subhirsute.

Hab. Near St. Barbara, in Upper California. Flowering in May. A very remarkable species: the stem terete, full of leaves, one and a half to two inches long, and about two lines wide, diminishing in size with the attenuation of the stem. Sepals lanceolate. Pappus double, the outer small, the inner of many brownish rays. Stigma exserted, smooth, and nearly equally filiform in the ray: obliquely *truncate* and slightly pubescent in the discal florets. The rays narrow, about the length of the involucrum, of a full purple red. This species appears to be considerably allied to *Corethrogyne,* but it has the achenium of Erigeron, somewhat prismatic, with three or four longitudinal brown lines or nerves; but the obtuse stigma appears to be an anomaly in the genus. The aspect of the plant is much that of an *Aster.* (My specimens are too young to be satisfactory.)

† † *Leaves dissected. Achenium not striated, rays rather numerous. Pappus double, the setæ barbellated.* (TRIDACTYLIA.)

*Erigeron compositum.* (PURSH, Vol. II., p. 535.) Pappus double in ray and disk, the outer short, entire, the inner of eighteen to twenty barbellate, deciduous rays.

HAB. Kamas prairie, in the Rocky Mountains. Flowering in June.

§. PHÆNACTIS, (*Stenactis* in part.)—Pappus persistent and scabrous, of fifteen to twenty-four setæ, external minute pappus simple; achenium compressed, with three to five striæ, radial florets very numerous.—Perennial, with entire leaves.

*Erigeron speciosum*, (DECAND., Vol. V., p. 284.) OBS.—Pappus double both in ray and disk; the exterior short and subulate. *Stenactis speciosa*, (LIND. Bot. Reg. t. 1577.) Common on the plains of the Oregon.

*Erigeron macranthum;* smooth, lower leaves spathulate-oblong, obtuse, attenuated at base; stem leaves elliptic-ovate, or ovate, abruptly apiculate, scabrous on the margin; peduncles few, one-flowered, corymbose; rays a little longer than the disk; sepals narrow and acuminate, glandular.—*Erigeron grandiflorum*, NUTT. in Journ. Acad. Nat. Sci., Vol. VII., p. 31, not of HOOKER.

HAB. Sources of the Missouri and the plains of the Platte. Flowering in August. Allied to the preceding. Rays numerous, blue. About eighteen inches high. Flowers four or five on a stem.

*Erigeron *hispidum;* stem erect, corymbose, above scabrous and hispid; leaves entire, ciliate and scabrous on the margin, radical spathulate, cauline sessile, acuminate; peduncles elongated, one-flowered; sepals of the involucrum hoary, hispid, very hirsute, much acuminated; rays very numerous.

HAB. St. Barbara, Upper California. Nearly allied to *E. speciosum*, from which, however, it is very distinguishable by its exceedingly hirsute involucrum, and hispid, naked, elongated peduncles; the leaves appear, also, broader, and scabrous towards the points. Rays blue, more numerous than in *speciosum*, and not so long. Pappus double in ray and disk; rays twenty to twenty-four, persistent.

*Erigeron *maritimum;* stem pilose, decumbent, branching from near the base; leaves thick and entire, spathulate-oblong, sessile, obtuse, the lower narrowed at base; branches several, one-flowered, flower large, rays very numerous; involucrum lanuginous as well as the margins of the leaves, sepals acuminate.

Hab. On the sea-coast of the Oregon and Upper California. A large, rather succulent leaved plant, sending up several stems about a foot high, with leaves and flowers very similar with those of *Erigeron bellidifolius*. Stem and uppermost leaves softly hairy, somewhat three-nerved. Flower very large, rays pale red. Achenium angular, with four or five brown striæ. Pappus double, rays of the pappus twenty to twenty-four, about the length of the discal florets, and not deciduous.

*Annual or perennial. Leaves entire or lobed. Pappus double in ray and disk, the inner of eight to fifteen, short, deciduous, somewhat scabrous rays.* Olygotrichium; (Stenactis in part.)

*Erigeron *divaricatum;* ⊙ hirsute, stem branching from the base; branchlets one-flowered, rather naked, fastigiate; radical leaves spathulate, the rest linear, sessile, acute, attenuated below, all entire; inner pappus of about eight setæ; rays very numerous, narrow, white.

Hab. In the Rocky Mountains and the plains of Oregon. About one foot high, at length very much branched, the leaves an inch or more long, about a line wide. Pappus double in ray and disk, the inner of remarkably few rays, very deciduous.

*Erigeron tenue,* (Gray.) *E. quercifolium,* Nutt. and Decand., not of Lam., pappus double in ray and disk, the inner of about twelve short deciduous bristles.

*Erigeron strigosum β. gracile;* stem leaves and involucrum pubescent, branches fastigiate.

Hab. Oregon plains.

*Erigeron *occidentale,* 2; hispid with a short pubescence, corymb compound, irregular; lower leaves oblong-lanceolate, obtuse, subserrulate, upper linear entire; sepals lanceolate, acute, scarcely hirsute; rays very numerous, red; inner pappus of about twelve rays; the outer very distinct.

Hab. In Oregon. A low perennial species, with broadish leaves on the lower part of the stem. Allied to *E. strigosum*, but scarcely the same, with red flowers and broad leaves.

§. Trimorphæa. (Decand. Vol. V., p. 290.)

*Erigeron *nivale;* stem subcæspitose and hairy at the base, mostly with one capitulum; radical leaves spathulate, cauline lanceolate, acuminate, subamplexicaule; summit of the stem and involucrum glandularly pubescent; sepals linear

and acuminate, (not hirsute;) pappus longer than the linear, elongated, somewhat pubescent achenium.

Hab. In the central chain of the Rocky Mountains, towards the sources of the Colorado of the West, on the limits of perpetual snow, (lat. 42°.) Allied to *E. alpinus*, but with semiamplexicaule leaves, widest at the base. Pappus longer than the involucrum. Rays? . . . . A few filiform female florets outside the discal ones. Achenium long and linear, compressed, slightly silky.

*Erigeron *racemosum;* lower leaves spathulate, smooth; petioles ciliate; several stems from one root, simple, racemose, peduncles or one-flowered branchlets usually elongated; cauline leaves somewhat hirsute, sessile, long and linear, subacute; sepals few, hirsute acute; rays very numerous, scarcely exserted beyond the pappus, (tubular styliferous florets none;) pappus more than twice the length of the linear pubescent achenium. *β. *angustifolium;* radical leaves linear-spathulate, peduncles contracted. *E. glabratus*, Hook. Flor. Bor. Am., Vol. II., p. 18, not of Decandolle, (as a variety of *E. alpinus*.) Allied to the *E. elongatum* of Ledebour.

### §. Cænotus. (Nutt.)

*Erigeron canadense*, Linn.

Hab. In Oregon common; also in the Sandwich Islands at Ouau, or a variety of it.

## *ASTRANTHIUM.

Capitulum many-flowered, heterogamous; rays about one series, ligulate, neuter, or sterile. Discal florets tubular, hermaphrodite, five-toothed. Receptacle conic, alveolate. Involucrum hemispherical, the sepals lanceolate and very acute, membranaceous on the margins, imbricated in two to three series, and nearly equal. Achenia obovate, compressed, narrowed at the apex, somewhat scabrous, without any prominent margin, and destitute of pappus.—Divaricately branching annual plants; leaves alternate spathulate, or linear, entire. Rays numerous, pale red. Flowers terminal, fastigiate.

*Astranthium integrifolium.* ⊙ *Bellis integrifolia*, (Mich. Flor. Am., Vol. II., p. 131. In Tennessee and Arkansa. This genus appears to be much more allied, by the fruit, to *Eclipta* than to *Bellis*.

## Division III.—Chrysocomeæ.

Receptacle naked. Capitulum wholly yellow, with or without rays, rays neuter or feminine. Pappus paleaceous or pilose, rarely wanting; similar or dissimilar in the ray and disk. In the section *Chrysopsideæ* double, the exterior short and chaffy.

### BRACHYRIS.

Brachyris *Euthamiæ.*

Hab. In the Rocky Mountains, towards the upper branches of the Platte. Suffruticose.

*Brachyris *divaricata;* suffruticose, glutinous, corymbosely and divaricately branched; leaves narrow linear, acute; flowers nearly all pedunculate; involucrum turbinate, the scales ovate, rays about six, discal florets about seven or eight, pappus of the ray somewhat shorter, the rest elongated.

Hab. With the above, in the Rocky Mountains, to which it is nearly allied, but with larger and seldom sessile flowers. Very resinous and heavy-scented.

### *AMPHIACHYRIS.

(Decand. Vol. V., p. 313, as a section of Brachyris.)

Character nearly that of Brachyris, but with the involucrum obovate and bracteolate, scales few and obtuse, not herbaceous at the points. Receptacle deeply alveolate. Rays feminine, eight to ten, oval. Discal hermaphrodite florets twenty-five to thirty, small. Pappus of the discal florets united at base, dividing into about six entire setæ. Radial florets, with a very minute crown of scarcely visible setæ.—A very distinct genus, allied to *Hemiachyris*, but wholly different in the pappus, which scarcely differs from that of Grindelia, but it is united at base, and quite persistent.

*Amphiachyris dracunculoides.* (Decand., under *Brachyris*, Vol. V., p. 313.) I collected this plant in 1818, on the margins of ponds, near Salt River of Arkansas. Flowering in September.

## GRINDELIA. (Willd.)

GRINDELIA **robusta;* herbaceous, smooth; leaves cordate-oblong, obtuse, amplexicaule, coarsely serrate, scabrous on the margin, the upper ones acute, nearly entire; capituli corymbose, involucrum squarrose and leafy at base; receptaculum paleaceous near the margin, pappus of two setæ.

HAB. St. Pedro, Upper California. Flowering in April. A very stout and robust species, about eighteen inches high, apparently biennial, very smooth; leaves about an inch broad, an inch and a half long. Rays forty to fifty, flowers very large, more than twice the size of those of *G. squarrosa*, which this species much resembles, but the leaves are broadest at the base. Stigma hirsute, pointed, but little exserted.

*Grindelia* **virgata;* smooth or pubescent, herbaceous, (biennial;) stem virgate, cylindric, tall and slender, branching towards the summit, branches mostly one-flowered, fastigiate; leaves linear-oblong, or oblong-lanceolate, very acute, entire, or serrulate, semiamplexicaule; involucrum glutinous, the lower sepals filiformly attenuated and spreading; rays neuter, pappus of two to three setæ.

HAB. Forests of Oregon, near Fort Vancouver, &c. Nearly related to the *G. integrifolia*, but the leaves are narrow, not ovate, and resemble those of a willow. Stem slender, twiggy and tough, three to four feet high, terminating in about five or six flowers, about the size of those of *G. squarrosa*. Leaves about three inches long, half an inch wide, above, all entire, diminishing much in size on the branchlets, pungently acute. Radical leaves spathulate-linear. Allied to *G. stricta*, DECAND., but with a squarrose involucrum.

*Grindelia* **nana;* perennial, smooth and glandularly punctate; many low, decumbent stems from the same root, terminating in a single flower, or in a few-flowered corymb; leaves narrow lanceolate or oblong, sessile, narrowed below, serrate, those of the branches near the flower often minute, entire; sepals with short, reflected tips, which descend to the branch; rays few, (sixteen,) scarcely styliferous; pappus of about two setæ.

HAB. With the above. Nearly allied to *G. humilis* of HOOK. and ARN. β. **integrifolia;* leaves nearly entire, involucrum globular, squarrose to the base.

OBS.—Scarcely a foot high, usually decumbent, or assurgent. Lower leaves often incisely serrate, linear-lanceolate, narrowed below. Rays a little longer than the disk; involucrum glutinous. In the entire leaved variety the leaves are smooth on the margin; perhaps a distinct species; allied to *G. integrifolia* of Decandolle.

*Grindelia * discoidea;* herbaceous, perennial, smooth and resinously punctate; branches one or two-flowered, fastigiate; leaves oblong-linear, acute, sessile. minutely serrulate; involucrum glutinous; reflected points of the sepals short; flowers discoid; pappus of two setæ.

Hab. On the banks of the Oregon. A genuine species of the present genus, though devoid of rays. Stigmas pointed, pubescent. Capitulum rather small. Leaves about one and a half inches long by two to three lines wide, the serratures very delicate and minute. Stem about a foot high, several from the same root.

*Grindelia * cuneifolia;* smooth, leaves entire? cuneate-oblong, obtuse, or linear-oblong, acute, amplexicaule; capitulum sessile, somewhat glutinous, squarrose; stigmas very long, acute, pubescent.

Hab. St. Barbara, Upper California. Of this I have seen only two small branches, the lower leaves may be different. The capitulum like that of *G. glutinosa*, of which it is, perhaps, a variety. The stigmas very long and exserted. Leaves pellucidly punctate. Pappus of five or more setæ.

## HETEROTHECA. (Cassini.)

Heterotheca * *grandiflora;* villous and pilose; lower leaves oval, sparingly serrate, petiolate, upper leaves sessile, entire, lanceolate, acute; stem densely pilose below, the summit paniculately corymbose, glandular, as well as the narrow, acute sepals; rays linear; pappus double, the outer dimidiate; achenia obovate-compressed, sericeous. *Diplopappus scaber?* Hook. Flor. Bor. Am., Vol. II., p. 22.

Hab. On rocks near the sea, round St. Barbara, Upper California. A very showy, large flowered species. Stem about eighteen inches high, covered with long, softish hairs, diminishing toward the summit, which becomes glandular. Peduncles rather long, and, as well as the narrow linear sepals, clothed with a short, glandular, darkish pubescence. Pappus very copious, bright brown, the outer nearly the same colour, not very distinct; radial achenia naked, triangular, nearly smooth. In the *H. scabra* the pappus is about half the length of the present, (as is the capitulum,) scarcely half as copious, and the outer, very conspicuous pappus, is silvery white. This plant I have never seen in Oregon or in California.

## CHRYSOPSIS. (Nutt.)

*Chrysopsis Lamarckii.* (*Heterotheca Lamarckii*, Cassini. *C. divaricata*, Elliott.) Certainly no *Heterotheca*, there existing an uniform double pappus;

the outer chaffy crown, is, however, very short, and best seen in an early stage of growth.

*Chrysopsis hispida.* (*Diplopappus hispidus*, Hook. Flor. Bor. Am., Vol. II., p. 22.) In this species, so much allied to *C. villosa*, there are numerous aromatic, resinous glands spread over most part of the plant; the quantity of this resinous matter, however, varies, but is never wholly wanting. The involucrum is rarely at all smooth, more or less slenderly pilose, and sometimes glandular. Perennial, often somewhat decumbent, six to eight inches high, fastigiately branched; the rays deep yellow, pappus brownish, scabrous. Radical leaves spathulate, long petiolate. Achenium silky. Outer short pappus chaffy, white, very distinct.—In *C. villosa* the outer pappus is far less distinct, and much more slender than in the present plant.

*Chrysopsis *foliosa;* 4, sericeously villous, and more or less canescent, the margin and lower surface of the leaves scabrous; flowers fastigiate, corymbose; leaves entire, oblong or oblong-ovate, subamplexicaule, crowded, acute, ciliate below; scales of the involucrum linear, acute, villous; achenium silky; pappus scarcely scabrous, outer pappus slender, dimidiate.

Hab. In the Rocky Mountain plains, near the banks of the Platte. Flowering in August. About a foot high, sending up many hairy stems from the same root. Nearly allied to *C. villosa*, but far more pubescent and hoary, with the leaves widest at the base. In some specimens quite hoary, the hairs feel as soft as silk, but on removing this clothing, the under surface is covered with numerous scabrous elevations. A very showy species.

*Chrysopsis *mollis*, 4; sericeously villous, leaves entire, spathulate-oblong, the lower narrowed below, the rest oblong and sessile, mostly obtuse; corymb few-flowered; involucrum villous; the scales lanceolate, acute; achenium silky, the outer pappus minute.

Hab. With the above, which it much resembles, but the leaves are more oblong, not in the least scabrous nor any where ciliate; the stem, also, softly villous.

§ I. Subgenus. *Phyllopappus.† *Receptacle alveolate. Involucrum, sepals in about two series, subequal, flat. Outer pappus of about twenty paleaceous, linear-lanceolate, eroded scales, the inner of about twenty-five scabrous setæ. Annual, with the lower leaves incisely serrate.*

† From the exterior pappus being leaf-like.

*Chrysopsis pilosa*, ⊙; very softly pubescent and hairy; leaves elongated, linear-lanceolate, acute, the lower ones incisely serrate, scales of the involucrum linear-lanceolate, acuminate, nearly equal; achenium with ten ribs; (a character common to the fruit of other species of Chrysopsis when perfectly mature.) *C. pilosa*, NUTT., Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 66. (Small specimens, in which the leaves often occur entire.)

Subgenus.—*PHYLLOTHECA. *Rays feminine, with rudiments of stamina or filaments. Stigmas of the ray very long, filiform, and smooth, those of the disk pubescent at the apex, and somewhat lanceolate. External paleaceous pappus minute, the inner pilose and scabrous; involucrum imbricate, and bracteolate or foliaceous.*

*Chrysopsis *sessiliflora;* 2; viscid and pubescent, leaves oblong acute, entire, sessile; branches fastigiate, with one to three sessile capituli.

HAB. St. Barbara, Upper California. Flowering in April. Possessing a heavy aromatic odour and bitter taste, almost like that of some *Gnaphaliums*. The whole plant more or less hirsute and viscidly glandular; leaves about an inch long, three or four lines wide, linear-oblong, rather crowded, narrowed below, sessile. The capitulum surrounded by leaves at its base, like those of the stem, only narrower and longer. The outer pappus scarcely visible. Rays narrow and elongated, deeply toothed, about thirty.

## *PITYOPSIS.†

Flowers heterogamous, rays feminine; florets of the disk five-toothed, tubular. Stigmas slenderly filiform, equal and obtuse, in the ray smooth, in the disk hirsute. Receptacle alveolate, dentate, naked. Involucrum imbricated in several unequal series; scales carinate, rigid, membranaceous on the margin. Achenium slender, cylindric-fusiform, internally angular, even, and ten-striate, contracted and rostrate at the summit, acuminate below; pappus double, each in a single series, the external short, slender and paleaceous, the inner pilose and scarcely scabrous, (of forty to forty-five rays.)—Perennials, with alternate, entire, filiform or grass-like leaves, naked, or more usually clothed

† *P. pinifolia* having leaves resembling those of the pine tree, and hence the allusion.

with a very long, flaky, silk-like, more or less deciduous pubescence! flowers in corymbs, simple or paniculate; rays rather broad and few, yellow, as well as the disk. Pappus very slender, fulvous, the external chaffy kind, also, nearly of the same colour. Achenium very remarkable for its tenuity and acumination at either extremity, black or brown when ripe, and somewhat sericeous; the striatures not elevated above the surface into ribs, and very slender.

*Pityopsis pinifolia;* smooth, leaves crowded, very long and filiform; branches one-flowered, corymbose; scales of the involucrum in three or four series, carinate, pubescent at the tips; achenium pilose, with a very distinct rostrum.

**Hab. In Georgia, on sand hills, between Flint and Chatahoochee rivers.**

§ I. Sericophyllum.—*Leaves gramineous, clad with flakes of a long, somewhat deciduous, appressed silky pubescence. Achenium with a shorter rostrum.*

*Pityopsis falcata;* deciduously sericeous, subdecumbent; corymb simple, peduncles or naked branchlets one-flowered, axillary and terminal; leaves short, linear, sessile, falcately recurved, acute; achenium sericeous, distinctly rostrate.

Hab. In barren pine woods, near Quaker-Bridge, in New Jersey, where alone I have ever seen it. Achenium rostrate and acuminate at base; pappus brownish, at first white, the external very slender.

*Pityopsis graminifolia.* Obs.—Involucrum and upper branchlets glandularly pubescent. Achenium slender, attenuated at either extremity. *Chrysopsis graminifolia,* Elliott. Decand., Vol. V., p. 326.

*Pityopsis argentea.*—Involucrum pubescent, not glandular. Achenium nearly black when mature, acuminated at each extremity. *Chrysopsis argentea,* Elliott. Decand., Vol. V., p. 326.

## *ERICAMERIA.

Capitulum few-flowered, heterogamous; rays feminine, three to six, short and oblong, three-toothed, sometimes bilabiate; discal florets about seven to nine, campanulate, five-cleft. Stigmas very long and slender, acuminate, pubes-

cent, in the ray smooth. Receptacle naked, alveolate, dentate. Involucrum imbricate, the inner scales membranaceous on the margin, below passing insensibly into the minute leaves of the branchlet. Achenium smooth, or somewhat hirsute, linear, angular and striate. Pappus pilose, scabrous, simple, unequal. Flowers wholly yellow?—Dwarf, often resinous shrubs, resembling heaths, exceedingly branched, branches very leafy; leaves minute and subcylindric, acerose and semipervirent, crowded; flowers small, in a contracted, leafy corymb, or solitary and terminal.—(So named from a resemblance to the genus *Erica* in the minute sempervirent leaves.)

*Ericameria *microphylla;* not viscid, leaves terete, distichally imbricated in the axils; rays three or four; achenium smooth; scales of the involucrum obtuse. ***Aplopappus ericoides*, Decand., Vol. V., p. 346.**

**Hab. On rocks in a mountainous situation, near St. Barbara, Upper California. Six to eight inches high, much branched from the base. Leaves three to six lines long, half a line wide, nearly cylindric, obtuse and rigid, at first, as well as the young branches, tomentose, at length smooth. Flowers crowded into an unequal corymb, the branchlets one-flowered, full of leaves to the summit; scales of the involucrum in about three series, the outer leafy and acute, the inner obtuse. This cannot be, in any respect, a congener with *Aplopappus ciliatus*, or the genuine Chilian species.**

*Ericameria *nana;* smooth and somewhat glutinous, densely branched; leaves linear acerose, acute, channelled; branchlets one to three-flowered; flowers terminal, fastigiate; scales of the involucrum similar; rays about four; **achenium subhirsute.**

**Hab. On shelving rocks on the Blue Mountains of Oregon. A shrub scarcely a span high, exceedingly branched and very brittle, somewhat resinous from exudation. Leaves no thicker than those of the pine, half an inch to an inch in length, somewhat narrower at base, sessile. Discal florets about eight, not deeply toothed, and, as well as the rays, yellow. Achenium nearly the length of the brownish pappus, linear, somewhat oblong, slightly hirsute when mature, somewhat angular and compressed.**

*Ericameria *resinosa;* every where glutinous, smooth; branches numerous, slender, corymbose; flowers pedicellate; scales of the involucrum acute, the base microphyllous and squarrose; leaves subulate, acute; rays about six, often bilabiate! discal florets about twelve, all ochroleucous, five-cleft.

Hab. With the above, for which I had at first confounded it, but the flowers are larger and not perfectly yellow, the branches more slender and open, the leaves somewhat longer, and a little broader. Involucrum turbinate, receptaculum narrow. The rays often, but not always, with two lower, strap-shaped, narrow segments, opposed to the bifid tipped liguli. The same thing, though less distinct, occurs in the preceding species. Discal florets deeply cleft, campanulate; anthers and stigmas much exserted, filiform, acuminate, hirsute. Achenium, when young, hirsute, and apparently almost cylindric. This species is so glutinous as to stick to the paper, and leave its impression behind.

Obs.—A very remarkable genus, altogether peculiar in habit, resembling some microphyllous shrub of the Cape of Good Hope.

## *ISOCOMA.

Capitulum homogamous, many-flowered, (twenty;) florets subcampanulate, deeply five-toothed. Branches of the stigma with an ovate apex, pubescent externally. Receptacle alveolate, dentate. Involucrum imbricate, inversely conic, scales membranaceous on the margin. Achenium subterete, sericeous; pappus pilose, copious, scarcely scabrous.—A stout perennial or suffruticose plant of California, with the aspect of a *Vernonia*, but the flowers yellow, in terminal corymbose clusters. Leaves alternate, cuneate-oblong, sharply serrate, rather small and crowded.—(So called from its equal flowers.)

*Isocoma * Vernonioides.*

Hab. In marshes near the sea, at St. Barbara, Upper California. Common. Flowering in April and May. One to two feet high, smooth, except the upper part of the stem, which is somewhat tomentose. Leaves about an inch long, by two to three lines wide, crowded in the axills, rather succulent, linear-oblong or cuneate, acute, sharply serrate, the serratures ending in bristly points; flowers terminal, conglomerate, in sessile or pedunculated clusters, bright yellow. Allied to *Lessingia*, but with the florets wholly similar. Also to the section *Aplodiscus* of *Aplopappus*, in Decand., Vol. V., p. 350, yet the stigma appears to be wholly different.

## *ERIOCARPUM.

Capitulum homogamous. Florets tubular, four to five-toothed, closed. Stigmas lanceolate, hirsute. Involucrum hemispherical, imbricate, the scales unequal, rigid, membranaceous on the margin. Receptaculum flat, alveo-

late, producing small, membranaceous, not exserted scales. Achenium obovate, compressed, densely lanuginous; pappus short and unequal, pilose, barbellate.—A low subalpine perennial, with a ligneous root, sending up many stems; leaves alternate, cuneate, serrate, the serratures ending in bristles; capituli corymbose.—Allied to *Aplopappus*, but very distinct from the true Chilian species, both in the absence of rays and the nature of the pappus. Allied to the preceding genus, but with a different involucrum, receptaculum and stigma, &c.—(So called from its lanuginous fruit.)

*Eriocarpum *Grindelioides.*

Hab. On shelving rocks in the Rocky Mountain range, Oregon. Stems about six inches high, pubescent, as well as the under side of the leaves. Leaves about one to one and a half inches long, by three to four lines wide, ciliate, serrate, cuneate-oblong. Florets scarcely exserted beyond the fulvous pappus, pale yellow, the teeth never expanding, and the summits or cusps of the anthers exserted and conspicuous. Pappus scarcely longer than the achenium.

## *AMMODIA.

Capitulum homogamous, many-flowered, florets tubular, five-toothed; stigmas elongated, slenderly filiform, equal and pubescent. Anthers not bisetose. Receptacle naked, alveolate. Involucrum loosely imbricate, scales acute, flat, one-nerved, membranous on the margin, gradually shorter. Achenium oblong-linear, compressed, pubescent, slenderly striate, acuminate at base; pappus pilose, copious, slender, scarcely scabrous.—An inconspicuous flowered perennial, with entire, alternate, oblong, narrowish leaves. Capituli in an irregular compound corymb; involucrum obconic, florets very numerous, pale yellow, upper part of the stem and involucrum glandular.—Allied apparently to *Inula*, but the anthers not bisetose, and the ray wholly wanting. Yet, at first glance, the plant might readily be mistaken for *Inula viscosa*, in which the anthers are furnished with basal setæ, or the *I. ammophila*, *β. salsoloides* of China!—(The name given is in allusion to its predilection for sandy places.)

*Ammodia *Oregona.*

Hab. On the sand and gravel bars of the Oregon and its tributary streams; common. Flowering in August. Many stems from the same root, about a foot high, more or less hirsute; the leaves nearly smooth, scabrous on the margin, oblong, acute, sessile, rather numerous; flowers in an irregular, paniculate corymb, very inconspicuous, of a pale yellow, the florets nearly hid in the pappus, which is white and very slender, as in Inula. Achenia almost fusiform. Scales of the involucrum lanceolate, acute, in about four series. Florets fifty, or more. The whole plant possesses a heavy aromatic odour.

## *MACRONEMA.†

Capitulum heterogamous, or homogamous, many-flowered, rays few or none, feminine, often with the rudiments of stamina; florets of the disk tubular-campanulate, five-cleft at the apex. Branches of the style very long, equally filiform, exserted, acute, and hirsute. Involucrum subimbricate in two nearly equal series, the inner rigid and membranaceous on the margin, the outer bracteolate or foliaceous. Receptaculum alveolate. Achenium linear-oblong, compressed, very long, obscurely striate, smooth or pubescent. Pappus pilose, copious, scabrous, unequal.—Low, viscidly pubescent shrubs, with many stems and much branched; branches one-flowered, fastigiate; rays and disk yellow; leaves alternate, entire.—Allied to *Aplopappus*, though remotely, having a different pappus and involucrum, &c.

*Macronema *suffruticosa;* minutely and viscidly pubescent, leaves oblong-linear, acute, numerous, rays six to eight.

Hab. On the sandy and gravelly banks of the Malade, a stream of the Oregon, near the Blue Mountains. A rather elegant low shrub, woody towards the base, about six to eight inches high, sending up numerous slender, simple, mostly one-flowered branches, from the summit of the low, woody stem; leaves about one to one and a half inches long, by about two lines wide, rather crowded. Capitulum large and hemispherical, containing thirty or more florets, with about eight linear-oblong, three-toothed rays, having often the same pubescent stigmas with the discal florets, and not unfrequently the rudiments of stamens. Pappus fulvous, exserted beyond the short involucrum, nearly as long as the florets, yet not longer than the elongated achenium. Stigmas exceedingly long, almost as in the *Eupatoriums*, sometimes trifid.

### § *Eugymna.—*Flowers discoid, achenium glabrous.*

*Macronema *discoidea;* glandular pubescent, shrubby; young branches tomentose, leaves cuneate-oblong, obtuse; rays none, achenia smooth.

† In allusion to the long filiform styles, (μακρος, *long*, and νημα, *a thread*.)

Hab. Banks of Lewis' River, and other streams of the Oregon. Allied to, but very distinct from the preceding, with the same elongated, hirsute stigmas. A low, branching, somewhat spiny shrub, about half a foot high. Leaves about an inch long, two to three lines wide. Scales of the involucrum lanceolate-linear, part of the outer series resembling the leaves as in the preceding species; florets about twenty-five; achenia very glabrous, slightly striated, linear-oblong.

## BIGELOWIA. (Decand.)

Obs.—Involucrum three to four-flowered; branches of the stigma short, scarcely exserted, ligulate, the apex sublanceolate, puberulous.—Low herbs with large radical leaves and scapoid, almost naked stems; branches corymbose.

*Bigelowia nudata* and *B. virgata.*

Hab. On the borders of sandy, shallow ponds, from Virginia to Florida. The *B. nudata* as far north as New Jersey.

## *CHRYSOTHAMNUS.

Bigelowia, but with the receptaculum naked. Capitulum five to eight-flowered; branches of the stigma filiform, cylindric, exserted, acute, pubescent nearly their whole length.—Very branching shrubs of the western interior and Rocky Mountain plains, with entire, equal, linear leaves, and fastigiately clustered flowers. Most of the species more or less resinous, and with a heavy aromatic odour.—(Named from their affinity to *Chrysocoma*, and brilliant golden yellow flowers.)

*Chrysothamnus *pumilus;* shrubby, dwarf, smooth or pulverulently pubescent; leaves narrow linear, acute, partly three-nerved; involucrum about five-flowered.

Hab. On the borders of Lewis' River and the Rocky Mountain plains. A low shrub, much branched from below, about six inches high; flowers in terminal, fastigiate clusters. Involucrum smooth or glutinous. β. **Euthamioides;* involucrum ovate, the scales ovate and short. Perhaps a distinct species.

*Chrysothamnus **speciosus;* shrubby and virgately branched; leaves narrow, linear, acute, more or less tomentose; capituli in dense, conglomerate, terminal clusters, five-flowered; style hirsute, elongated; pappus copious, scarcely scabrous.

Hab. In the Rocky Mountain plains, near Lewis' River, common. Flowering in August. β. **albicaulis;* stem densely and whitely tomentose; perhaps a distinct species. Showy shrubs, three or four feet high, with numerous virgate branches, like the common Broom. Leaves one-nerved, scarcely half a line wide, one and a half to two inches long. Flowers abundant, brilliant yellow.

*Chrysothamnus dracunculoides. Bigelovia dracunculoides*, Decand., Vol. V. p. 329.

Hab. Rocky Mountain plains, near the banks of the Platte and Missouri. A shrub three to five feet high, with a heavy, unpleasant, though somewhat aromatic odour.

*Chrysothamnus viscidiflorus. Crinitaria viscidiflora*, Hook. Flor. Bor. Am., Vol. II., p. 24. With this plant I am unacquainted, but it agrees well with the present genus.

† *Capitulum six to eight-flowered; stigma ligulate.*

*Chrysothamnus lanceolatus;* shrubby, nearly smooth; leaves linear-lanceolate, acute, three-nerved, somewhat glutinous; capituli corymbosely clustered, six to eight-flowered; stigma ligulate, pubescent at the apex.

Hab. In the Rocky Mountains, toward the sources of the Platte, and on the banks of Lewis' River of the Oregon. A moderate-sized shrub, with broader leaves than usual, one to one and a half inches long, by three to four lines wide, slightly puberulous. Involucrum of about four series of ovate, concave, acute scales. Stigma exserted, flat, with an ovate puberulous apex, something like that of the true *Bigelowias*. Pappus white, not abundant, scabrous. Florets pale yellow.

## CHRYSOMA.

(Nutt., Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 67.)

Capitulum heterogamous, about five-flowered; liguli feminine, one to three, short and oval. Receptacle narrow, naked, alveolate, the central point elevated. Involucrum imbricate, the scales carinate, the inner ones longer. Achenium oblong, compressed, smooth, or somewhat pubescent. Pappus simple, pilose, scabrous, the rays numerous.—Shrubby, suffruticose or perennial? plants, with entire (or serrated) rigid, lanceolate leaves, opaque, or pellucidly punctate. Flowers in fastigiate, corymbose clusters, wholly yellow.—Allied to *Bigelowia*, but distinguished by the presence of liguli; to *Euthamia*, but the liguli only about two; from *Solidago* in the same manner, and also by the whole habit.

*Chrysoma solidaginoides;* shrubby; leaves oblong-lanceolate, obtuse, entire, pellucidly punctate; involucrum angular, rays one or two, achenium pubescent. *Solidago semifloscula,* MICH., Vol. II., p. 116.

HAB. East Florida. (Mr. Ware.) A shrub apparently four or five feet high, with stout, smooth branches. Leaves almost coriaceous, semipervirent? Branchlets slender, paniculate, fastigiate. Discal florets three; rays one or two.

*Chrysoma *pumila;* root woody, stem slender, simple, corymbose, the flowers in subsessile clusters; leaves rigid, somewhat coriaceous, linear-lanceolate, acute, entire, three-nerved, attenuated below, sessile; rays two or three; achenium smooth.

HAB. In open situations, on shelving rocks towards the western declivity of the Rocky Mountains. The whole plant about a span high, more or less viscid and resinous, with clusters of stems from the same woody root. Leaves two to three inches long, about a quarter of an inch wide, rather coriaceous, (sempervirent?) corymb regular, composed of sessile clusters by threes. Involucrum subcylindric, somewhat viscid. Discal florets three; rays usually two.

*Chrysoma uniligulata;* leaves lanceolate, at either end acuminate, serrate; panicle compound, many-flowered; involucrum narrow oblong, five-flowered; ligula one. *Bigelovia? uniligulata,* DECAND., Vol. V., p. 329.

HAB. In New Jersey, (probably near the sea-coast.) (Mr. B. D. Greene.)

## EUTHAMIA.

(As a section of *Solidago,* NUTT., Gen. Am., Vol. II., p. 162. DECAND. Prod., Vol. V., p. 341.)

Flowers heterogamous; liguli minute, twice as numerous as the discal, subcampanulate florets. Capituli small, oblong or ovate; involucrum imbricate, the scales agglutinated. Receptacle deeply alveolate, fringed. Achenia oblong-ovoid, villous, contracted at the summit; pappus comose, consisting of a small number of scabrous hairs.—Perennial, much-branching herbs, with entire linear leaves; flowers corymbose in sessile clusters, yellow.—Allied to *Nidorella* and *Brachyris,* rather than to *Solidago.*

*Euthamia graminifolia;* angles of the stem and veins of the leaves minutely hirsute; leaves lanceolate-linear, three to five-nerved; corymb compound; discal florets eight to ten; liguli fifteen to twenty, shorter than the disk.

HAB. From Canada to Florida.

*Euthamia tenuifolia;* smooth, upper part of the stem angular; leaves narrow-linear, mostly one-nerved, minutely punctate, somewhat rough on the margin; corymb diffuse, flowers solitary and sessile, in threes; discal florets five to six, liguli about the length of the disk, ten to twelve. *β. microcephala;* leaves very slender, capituli generally pedicellate, smaller. *γ. glutinosa;* capituli turbinate, pedicellate, resinously agglutinated.

Hab. From New Jersey to East Florida. β. Alabama. γ. East Florida.

*Euthamia *occidentale;* very smooth and virgately branched, the branches and stem terete, or scarcely angled; flowers large, in simple, terminal, contracted clusters; leaves lanceolate-linear, narrow, scabrous on the margin, mostly one-nerved, or obscurely three-nerved; discal florets about fourteen to fifteen, radial twenty-two or more.

Hab. Banks of the Oregon and Wahlamet, and Lewis' River, in the Rocky Mountains; chiefly on the sand and gravel bars, as well as islands. A tall, very smooth species, bearing very few large flowers, chiefly in small, contracted, terminal clusters, and seldom, if ever, in threes, rarely corymbose. Scales of the involucrum linear-lanceolate, acute.

## SOLIDAGO. (Linn.)

### * *Racemes secund.*

*Solidago canadensis.*

Hab. On Wappatoo Island and the Banks of the Oregon and Wahlamet.

*Solidago procera. β. *salicifolia;* leaves linear-lanceolate, subserrate, smooth, scabrous on the margin, obsoletely three-nerved, flowers larger.

Hab. With the above.

*Solidago serotina.*

Hab. With the above. Achenium smooth.

*Solidago *Pitcheri,* (Nutt. in Acad. Nat. Sci., Vol. VII., p. 101.) Very smooth and robust, leaves cuneate-elliptic, or cuneate-oblong, acute, sharply serrate, three-nerved, above lanceolate; racemes secund, contracted, pyramidal or corymbose; scales of the involucrum linear-lanceolate, somewhat obtuse; discal and radial florets about ten each; the liguli shorter than the disk; achenium pubescent.

Hab. On the banks of the Oregon and Wahlamet; in Arkansa, (Pitcher;) also near Salem, N.

Carolina. A stout species, three to four feet high, allied to *S. serotina*, but with a cuneate leaf, and pubescent achenium.

*Solidago* **elongata;* stem puberulous; leaves oblong-lanceolate, cuneate, acute, sparingly and irregularly serrate, scabrous on the margin, below obscurely three-nerved; panicle elongated; racemes erect, or somewhat recurved; rays narrow, as long as the disk, ten to sixteen; achenium pubescent. β. Leaves longer, and the racemes more secund.

Hab. Wappatoo Island and the plains of the Oregon. Remarkable for the great elongation of the panicle, often half a foot long, narrowly pyramidal, three to four inches wide in the widest part. Rays very narrow, numerous, two-toothed; discal florets eight to twelve; pedicels and rachis pubescent. Receptacle deeply alveolate. It has the aspect of *S. puberula*, but the stem is very slenderly and minutely pubescent.

*Solidago Missouriensis;* (Nutt. in Journ. Acad. Nat. Sci., Vol. V., p. 7.) Rocky Mountains. From specimens which I obtained since publishing this species, I find that it belongs to the first section of the genus, having the lower leaves three-nerved, often distantly serrulate, and the whole plant, with its thickish polished leaves, perfectly smooth, though a little scabrous on the margin. Discal florets about twelve, rays ten, shorter than the disk. Achenium slightly pubescent.

Hab. Missouri, Arkansas, the Rocky Mountains, and near Chapel-Hill, North Carolina.

*Solidago radula;* (Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 102.) Arkansa. This species has some affinity with *S. rugosa*, but the leaves have no rugosity, and are cuneate-oblong, above ovate-lanceolate, the lower serrated distantly towards the apex. Scales of the involucrum oblong-ovate, very smooth and brownish. Rays about six, the length of the disk. Nearly allied to the *S. scabrida*, Decand.

** *Racemes erect.*

*Solidago hirsuta;* (Nutt. in Journ. Acad. Nat. Sci., Vol. VII., p. 103.) Very similar to *S. bicolor*, but the rays are yellow and smaller, and the leaves lanceolate or oblong-lanceolate.

*Solidago* **nana;* somewhat cinereous and pulverulently pubescent, dwarf, many stems from the same root; lower and radical leaves spathulate, obtuse, entire, or subserrulate at the apex, stem leaves linear, narrowed below; ramuli

fastigiate, subcorymbose; bractes linear; involucrum nearly smooth, scales ovate; rays about seven, oblong, as long as the disk; achenium pubescent.

Hab. In the Rocky Mountain range, near Lewis' River of the Shoshonee. About a span high, with a large, black, almost woody root. Stem leaves small, radical ones about one and a half inches by half an inch wide; scales of the involucrum unusually broad, pubescent on the margin, rays conspicuous. Apparently allied to *S. nemoralis*, though very distinct and alpine.

*Solidago *Californica;* villous and cinereous; leaves nearly all equal and somewhat crowded, oblong-lanceolate and acute at each end, near the apex sometimes very slightly serrulate; panicle elongated, nearly equal; scales of the involucrum lanceolate, acute, somewhat pubescent; rays about nine; achenium pubescent.

Hab. Near St. Barbara, in Upper California. Two to three feet high. Discal florets about nine, as well as the rays. Allied to the preceding, but softly villous and acute leaved; the stem leaves are also nearly as large as the radical ones, about an inch or an inch and a half long, by less than half an inch wide.

*Solidago *glutinosa;* smooth; above, as well as the involucrum, viscid, with a yellow resin; stem angular; leaves oblong-lanceolate, sessile, narrowed below, serrulate, acute, scabrous on the margin; panicle spiciform, simple or compound; scales of the involucrum ovate-oblong; rays about ten, oblong, bidentate and conspicuous; achenium pubescent.

Hab. On the plains of the Oregon and Wahlamet rivers, not uncommon. Allied to *S. Virga-Aurea*, which it resembles in habit; also to the *S. simplex*. About two feet high, with a brown stem, angular above; lower leaves three or four inches long, by about half an inch wide, the radical ones attenuated into long petioles. Upper part of the stem, bractes and involucrum indued with an orange, varnish like resin, of a strong aromatic and rather unpleasant taste. Rays about eight to ten; discal florets about five or six; pappus of the rays a little shorter.

*Solidago limonifolia.* A narrow leaved variety.

Hab. Coast of Upper California, near St. Barbara.

*Solidago multiradiata;* v. s. in Herb Schweinitz, from Labrador. It appears to be a depressed specimen of *S. leiocarpum*, Decand. The only important difference is that the sepals are somewhat wider; the achenium is equally smooth.

*Solidago *corymbosa;* lower leaves oblong-lanceolate, serrated somewhat at the apex, scarcely ciliate, the cauline leaves (very few) entire, ovate-amplexi-

caule, acute; stem smooth, except towards the summit; flowers in an irregular corymb; rays about ten to twelve, as long as the disk; scales of the involucrum linear-lanceolate, smooth; achenium pubescent.

Hab. The central chain of the Rocky Mountains, in forests. *S. multiradiata*, Hook., Vol. II., p. 5, not of Aiton. Closely allied to *S. multiradiata*, for which it appears to be taken by Hooker in Flor. Bor. Am., Vol. II., p. 5, but is, in fact, nearer to some varieties of *S. Virga-Aurea*, having pubescent achenia.

## *PRIONOPSIS.

(Aplopappus. Section I. Leiachenium, Decand. in part.)

Capitulum hemispherical, many-flowered; rays numerous, (two or more series,) entire, feminine. Discal florets slender and cylindric, mostly abortive. Stigmas of the ray smooth and very slender, scarcely exserted; those of the disk pubescent, rather short, filiform and obtuse, somewhat compressed. Receptacle slightly alveolate, flat. Involucrum imbricated, of many series of somewhat agglutinated, squarrose sepals, with leafy points. Achenium short and smooth, cylindric-ovoid, contracted at the summit; pappus rigidly setose, longer than the florets, scabrous, unequal, about ten of the setæ longer and thicker; pappus of the ray shorter and of fewer rays, deciduous.—A stout, herbaceous biennial, with the habit and entire aspect of *Grindelia glutinosa;* leaves alternate, ovate, obtuse, very conspicuously and distinctly serrate-ciliate; flowers wholly yellow, large, fastigiate; branchlets one-flowered.—(The name from *πριων, a saw,* and *οψις, resemblance,* in allusion to the elegant serratures of the leaves.)

*Prionopsis ciliata. Donia ciliata*, Nutt. *Aplopappus ciliatus*, Decand., Vol. V., p. 346. When the fruit is mature the pappus is so deciduous that the achenium may be supposed naked, it being thrown off, or nearly so, by the enlargement of the fruit, with which it does not progress in growth.

## APLOPAPPUS. (Cassini.)

Capitulum many-flowered, radiate; liguli feminine, in one series; discal florets hermaphrodite, fertile, five-toothed, tubular. Receptacle rather flat, foveo-

late, or alveolate, and fringed. Involucrum, scales loosely imbricate, sublinear, acute. Achenia oblong, somewhat terete, or turbinate, densely sericeous. Pappus setose, of several series, unequal; that of the liguli shorter, with the rays less numerous.—South American shrubs, or undershrubs, usually with alternate, sharply serrated, or bristly toothed leaves. Capitulum terminal, often pedunculate. Flowers wholly yellow.

*Aplopappus cæspitosus;* puberulous, stemless; leaves in rosulate clusters, cuneate-oboval, ciliately serrate, serratures bristly; scape elongated, one-flowered.

Hab. Chili, (Dr. Styles.) Leaves about an inch long, half an inch wide. Scape half a foot long. Capitulum large, hemispherical; rays about forty; pappus bristly, scabrous, brownish; achenium densely sericeous and shining. Sepals linear, acute. Root-stock woody.

*Aplopappus *cuneifolius;* suffruticose, smooth and viscid, dwarf; leaves cuneate, obtuse, serrate, serratures without bristles; stem short, scapoid, one-flowered; sepals very unequal, linear, acuminate; rays about twelve.

Hab. With the preceding, (Dr. Styles.) A much smaller species. Peduncle two to three inches long. Pappus bristly, scabrous. Achenium densely sericeous and short.

§ *Gymnocoma. *Flowers discoid; corolla not dilated; stigmas filiform, acute, hirsute.*

*Aplopappus *pinnatifidus;* stemless, smooth and glandular; leaves rosulate, linear, pinnatifid, segments bristly; scape very long, with small subulate leaves; sepals with bristly, acuminate points; florets numerous, discoid.

Hab. Chili, (Dr. Styles.) Achenia silky. Root-stock woody. Allied to *Eriocarpum*, but with a different stigma and habit.

## *HOMOPAPPUS.

Capitulum heterogamous, many-flowered, obovate or hemispherical. Rays feminine, about a single series, rarely infertile; discal florets slender, tubular, five-toothed, closed, fertile. Stigmas filiform, acute, hirsute. Receptacle alveolate, flat, dentate. Involucrum imbricate, in several series, scales more or less-agglutinated, oblong, or ovate, with foliaceous, spreading tips. Achenium linear, angular, subcylindric, mostly smooth, (pubescent in the doubtful sections Actinaphoria and Myrianthus.) Pappus setose, scabrous,

nearly equal, and similar in the rays.—Perennial, dwarf herbs, of an inelegant aspect, with alternate, nearly entire, or sharply serrated, spathulate, rigid, coriaceous leaves; capituli mostly sessile, terminal, and clustered in the axills of the leaves, rarely fastigiate. Flowers wholly yellow, and rather large, as in Chrysopsis. Allied to *Solidago*, particularly to *S. confertiflora;* and *S. spathulata*, of Mexico, appears to be a genuine species. From Aplopappus it differs much in habit, involucrum, achenium, &c.—(The name is given in allusion to the similarity of the pappus in the ray and disk.)

*Homopappus * paniculatus;* smooth, leaves spathulate-lanceolate, acute, cauline amplexicaule, rarely here and there subserrulate; branches subfastigiate; capituli in subterminal clusters, sessile; involucrum obconic; rays eight to ten, about twice the length of the disk; achenium slightly hirsute at the summit; **scales of the involucrum ovate-oblong, obtuse.**

Hab. Plains of the Oregon, not far from Walla-Walla, particularly the prairie called the Grand Ronde. About a foot high, growing in considerable quantities in wet places. Leaves three to four inches long, by half an inch to an inch wide, the radical much attenuated. Florets twenty-five or thirty, the pappus about their length; scales of the involucrum closely imbricated in three or four series, the scales rigid and membranaceous on the margins, with green, foliaceous, subsquarrose tips. The involucrum almost resembles that of a *Pteronia.* Pappus brown and rigid; achenium rather long.

*Homopappus * glomeratus;* smooth; leaves spathulate-lanceolate, very acute, generally entire, cauline amplexicaule, linear-lanceolate, or oblong; capituli axillary, and clustered towards the summit of the simple stem, or its branches, sessile, roundish and subcylindric, glutinous and squarrose; rays about eight to ten; **achenium very smooth, subcylindric.**

Hab. With the above, to which it is closely allied, but the involucrum is nearly round, and the achenium perfectly smooth, pale and shining, linear and subcylindric, somewhat compressed, and narrowed at each extremity. Sometimes (perhaps when the stem has been injured at the summit) it branches fastigiately, but it usually presents an interrupted spike, with leaves interposed between the clusters, which are about three together.

*Homopappus * argutus;* smooth; leaves spathulate-lanceolate, subacuminate, sharply serrate, cauline amplexicaule; capituli clustered, sessile, axillary and terminal; scales of the glutinous involucrum subsquarrose, lanceolate, acute; rays ten to twelve; achenium smooth.

Hab. With the above, and on the plains of the Oregon. About a foot high, very similar to the preceding, but with the leaves strongly serrated. Pappus rufous, very rigid; involucrum obconic. These three species have a strong resemblance to *Grindelia*, are all more or less glutinous and resinous, so as to have a bitterish taste; the leaves in the present species are often sprinkled with resinous atoms.

*Homopappus? spathulatus. Solidago spathulata*, Decand., Vol. V., p. 339. I have not seen this plant, but from the character given, and the large number of florets, it appears to belong to this genus. Is the pappus setose?

*Homopappus? squarrosus. Aplopappus squarrosus*, Hook. and Arnot. Bot. Beech., p. 146.

§ I. *Myrianthus.—*Capitulum nearly spherical, with many narrow rays; discal florets all fertile; pappus barbellate towards the apex, persistent; achenium compressed, angular; involucrum foliaceous.—With the habit of the preceding.

*Homopappus *racemosus;* smooth, summit of the simple stem and involucrum pubescent; leaves lanceolate, serrate, acute; above oblong-lanceolate, amplexicaule, often nearly entire; capituli few, racemose, (three to seven); scales of the involucrum oblong, leafy, rather obtuse, sometimes lanceolate; rays fifteen to twenty; achenium subsericeous.

Hab. Plains of the Wahlamet. About twelve to eighteen inches high. Leaves coriaceous, smooth, except the uppermost, narrow lanceolate, or oblong-lanceolate, acute, attenuated below in the radical ones. Serratures pungently acute. Flowers pedicellate. Involucrum hemispherical, scales imbricated in about three series. Pappus rigid, scabrous, fulvous, somewhat barbellated towards the extremities. Achenium as in the preceding, but smaller, (as well as the plant,) shining, pale testaceous, covered with sparse hairs, which do not conceal the striatures.

*Homopappus uniflorus. Donia uniflora*, Hooker, Vol. II., p. 25, t. 124. Rays apparently about twenty-five.

## Subgenus.—*Actinaphoria.†

Rays numerous, fertile or infertile. Stigma filiform, acuminate, pubescent. Achenium linear-oblong, subsericeous; pappus of one or two series of scabrous hairs, often barbellate towards the tips, some of them thinner and

† From *αχτιν, a ray*, and *αφωρια, sterile*, in allusion to the infertile rays.

shorter than the rest.—Perennial, alpine, tuberous rooted plants, with somewhat the habit of *Arnica*. Stem and lanceolate, serrated leaves smooth or lanuginous, the former one or few-flowered, subracemose.

*Homopappus* **Inuloides;* leaves lanceolate, subserrulate, softly lanuginous; stem one or few-flowered; sepals nearly equal, lanuginous; rays three-toothed, forty to fifty; achenium subsericeous.

Hab. In the moist, open, grassy plains of the Rocky Mountains, towards the sources of the Platte. From three or four inches to a foot high. The root a dark, turbinate tuber, clad, at the summit, with numerous fibrous, reticulated vestiges of former years' growth. Leaves lanceolate, often sparingly cartilaginously serrulate, the primary ones smooth; the rest of the plant, as well as the involucrum, softly lanuginous with a long, white, loose, woolly pubescence. Stem leaves sessile, the lower much attenuated below. Capitulum hemispherical; the involucrum flat, and its sepals nearly equal. Rays oblong, three-toothed, shorter than the disk, between forty and fifty; the discal florets one hundred and twenty, or more, small, tubular, shortly five-toothed; style generally included. Leaves two to four inches long, a quarter to half an inch wide.

*Homopappus* **multiflorus;* stem and petioles deciduously lanuginous; flowers racemose, branchlets one or few-flowered; leaves lanceolate, serrate, acute, almost coriaceous, the cauline linear, small and sessile; capituli hemispherical, pedicellate; sepals oblong, in about two rows; rays twenty to twenty-five; achenium subsericeous. *Donia lanceolata?* Hook., Vol. II., p. 25.

Hab. Prairies on the east and west side of the Rocky Mountains. From six inches to two feet high. Allied to the preceding, but much larger, the leaves at length, or from the first smooth, sharply and pungently serrulate; rays oblong, slightly three-toothed, longer than the wide disk. Involucrum almost flat, slightly pubescent, a little leafy externally, shorter than the pappus, which is slender. Flowers about the size of a Daisy. Several stems from the same root, with leaves sometimes so small as to appear almost as naked as scapes. Radical leaves four to five inches long, attenuated into long petioles. Root tap-shaped, crowned with numerous fibrous vestiges of former leaves. Stem sometimes only three-flowered, sometimes with many one to two-flowered branches, from near the base to the summit; occasionally subdecumbent.

## PYRROCOMA. (Hooker.)

*Pyrrocoma* **radiata;* smooth, leaves spathulate-obovate, cauline ovate-lanceolate, apiculate, serrate, amplexicaule, radical attenuated, entire, as well as the lower ones; flowers few, very large, fastigiate, axillary and terminal, sub-

corymbose, sometimes glomerate and sessile; rays about twenty-five; discal florets very numerous.

Hab. Plains of Oregon, near Walla-Walla. A low, robust plant, about twelve to eighteen inches high. Leaves rigid and coriaceous, four or five inches long, the lower one and a half to two inches broad. Capituli nearly as large as those of *Inula Helenium*. Involucrum almost exactly like that of *Liatris sphæroidea*, foliaceous, scarcely at all squarrose, the sepals ovate, acute, the lower bracteoles serrate; rays narrow; discal florets narrow tubular, not expanding nor exserted beyond the pappus. Stigma obtuse, flat, pubescent. Rays very narrow, shorter than the disk. Pappus rufous, shining, stiff and bristly, distinctly barbellate and thickened at the extremities, in two or more series, somewhat unequal, persistent, very like that of the genus *Pteronia*. Achenium very long, about the length of the pappus, oblong-linear, somewhat narrowed at each end, smooth, pale and shining, convex externally, internally somewhat angular.

## *STENOTUS.

Capitulum heterogamous, many-flowered, hemispherical or ovate. Rays in a single series, rather distant. Discal florets tubular, cyathiform, border five-cleft, spreading. Branches of the stigma filiform, flat, puberulous, exserted. Receptacle alveolate, dentate. Involucrum imbricate, scales ovate, erect, rigid, with broad membranaceous margins, (rarely bracteolate.) Achenium oblong, compressed, sericeous. Pappus setaceous, shorter than the florets, unequal, scabrous.—Low alpine perennials, with almost woody roots, and alternate, linear, entire, coriaceous, mostly smooth leaves; stems numerous from the same cæspitose caudex, dwarf and scapoid, one to three-flowered; flowers often large, wholly yellow. Although, in the general character, this genus approaches the preceding and Aplopappus, the habit is peculiar and wholly different from either.—(The name from στενοτης, *narrowness*, in allusion to the narrowness of the leaves, &c.)

*Stenotus acaulis;* very dwarf and cæspitose; leaves lanceolate-linear, pungently acute, scabrous and almost cinereous, three-nerved; scapoid stem one-flowered; involucrum hemispherical, scales membranaceous, acute; rays about twelve; achenium sericeous. *Chrysopsis acaule;* Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 33, t. iii., fig. 1.

Hab. Near the borders of Little Godin River, in the Rocky Mountains. Flowering in June.

A small, tufted alpine, only three or four inches high. Stems like scapes, bearing one or two small leaves.

*Stenotus cæspitosus;* somewhat cæspitose or tufted; leaves linear-sublanceolate, smooth, three-nerved, scabrous on the margin; stems scapoid, one to four-flowered; involucrum hemispherical, the membranaceous scales ovate, acute; rays about twelve; achenium sericeous. *Chrysopsis cæspitosus;* Journ. Acad., Vol. VII., p. 34.

Hab. Towards the sources of the Missouri and the Platte, in the range of the Rocky Mountains. More than twice as large as the preceding. Root somewhat ligneous. Leaves very acute, those of the stem two or three in number, wide, sessile, and somewhat lanceolate; peduncles very long. Pappus white; achenium brightly and closely sericeous, linear-oblong. Stigmas much exserted. Very nearly allied to the preceding.

*Stenotus * Armerioides;* somewhat cæspitose or tufted, caudex ligneous; leaves linear, slightly lanceolate, more or less glutinous, as well as the involucrum, scabrous on the margin; stems almost wholly naked, scapoid, one to three-flowered, peduncles very long, scales of the short involucrum broadly membranaceous, oval, obtuse; rays about twelve; stigma lanceolate; achenium densely sericeous, about the length of the short white pappus.

Hab. Towards the sources of the Platte, in the Rocky Mountain range, on shelving rocks. About a span high, with a large, distinctly woody root, of great length. Leaves three or four inches long, little more than a line wide, rigid and coriaceous, resinously viscid, in a slight degree three-nerved, all linear, about two leaves on the stem: peduncles two to three inches long; the stems appearing entirely like scapes. Involucrum imbricated in about two series, much shorter than the florets. Stigma unusually thick and large, puberulous. Achenium very thickly covered with silky hairs, as in the true species of Aplopappus. The plant, at first glance, has much the appearance of an Armeria. Allied to the preceding, but perfectly distinct.

§ I. *Oonopsis.—*Involucrum small, ovate; achenium linear, pappus fulvous.*

*Stenotus * multicaulis;* dwarf, subcæspitose, many-stemmed; leaves linear, radical obtuse, cauline acute; stems slender, one to three-flowered; flowers sessile; involucrum ovate, lanuginous, scales acuminate; rays about eight; achenium pubescent, linear.

Hab. On rocks, on the western declivity of the Rocky Mountains. A remarkable species, forming dense tufts, with leaves two to three inches long and about a line wide, the primary ones obtuse, the rest acute, the upper ones pubescent. Stems many, scarcely rising more than an inch above the leaves, slender like peduncles, terminating in one to three fastigiate flowers, which are sessile, or

immediately seated upon the uppermost leaf; involucrum small and ovate, composed of two rows of ovate, acuminate sepals, the tips somewhat herbaceous and projecting. Rays oblong, about eight, feminine, slightly three-toothed, longer than the narrow disk; discal florets tubular, cyathiform, the summit five-cleft. Stigma lanceolate, pubescent; achenium narrow, slightly pubescent when mature, linear-subcylindric? Pappus short, scanty, scabrous, brownish.

## *PENTACHÆTA.

Capitulum heterogamous, many-flowered, hemispherical. Rays feminine in two or three series, oblong. Discal florets tubular, oblique, ringent and five-cleft at the summit. Receptacle punctate, naked, convex. Involucrum loosely imbricate; scales linear, flat, acute, with broad membranaceous margins, in two or three series. Achenium turbinate, angular, hirsute; pappus consisting, in ray and disk, of five scabrous bristles, united at the base, which is not deciduous.—A small and slender annual of Upper California, branching from the base, branches divaricate, one-flowered, fastigiate. Leaves alternate, entire, nearly glabrous and filiform. Flowers wholly bright yellow; the rays slightly three-toothed.—(The name alludes to the pappus of five bristles.)

### *Pentachæta aurea.*

Hab. In dry plains near the sea, in the vicinity of St. Diego, Upper California. Flowering in April. A very elegant, though often minute plant, from two or three inches to a foot high, branching usually from the base in an umbellate manner, the branches one-flowered. Leaves, on their margin, as well as the upper part of the stem, somewhat sparingly pilose, the hairs rather long and soft. Flower about the size of a Daisy, almost orange-yellow, with twenty to fifty rays, much longer than the disk. Involucrum that of the true Aplopappus, the scales exactly similar with each other, linear-lanceolate and sharply acuminate, membranaceous, and somewhat lacerate on the margin, the centre green and one-nerved. Anthers without setæ at base. Discal florets somewhat curved and ringent, or deeper cleft above. Stigmas filiform, very hirsute, acute or acuminate, at length much exserted. Stigmas of the rays long and smooth; the ray simple, or not labiate. In habit this plant appears to approach some of the Chilian species of Chætanthera. It seems, also, though remotely, allied to Chætopappa, but is wholly distinct from all the other Chrysocomeæ, with which it is associated. Allied to the Mutisiaceæ, but with the stigma of Aster.

Subtribe.—*BACCHARIDEÆ.*

BACCHARIS **salicifolia;* shrubby, smooth, branches angular, leaves mostly oblong, or oblong-lanceolate, subdenticulate, uppermost nearly linear, entire, viscid; capituli sessile, clustered, involucrum ovate, as well as the smooth scales.

HAB. Banks of the Arkansa, nearly allied to *B. glomeruliflora*. More or less resinously punctate. Leaves very obscurely three-nerved, attenuated into a petiole.

*Baccharis pilularis;* DECAND., Vol. V., p. 407.

HAB. Near St. Diego, Upper California, and Monterrey. In my specimens of the fertile plant the leaves are often strongly denticulate, three-fourths of an inch long, by half an inch in width; the capituli solitary, or by threes, at the ends of the branchlets, and sometimes, also, aggregated into a considerable panicle. Achenia smooth, with ten grooves, the pappus of moderate length. A shrub three or four feet high. It appears to be subject to the attack of some insect, which causes excrescences on the branches, and hence, I suppose, arises the specific name.

*Baccharis Pingræa;* DECAND., Vol. V., p. 159.

HAB. In the vicinity of St. Diego, Upper California. Young leaves and branchlets somewhat glutinous. Achenium with very few striatures.

Subtribe.—*TARCHONANTHEÆ.*

**DIAPERIA.*

Capitulum many-flowered, heterogamous, flowers all tubular, the rays feminine, slender, in several series; discal florets two or three, masculine, with a crenate, four-toothed border. Receptacle flat, wholly paleaceous, the palea obtuse, exterior chaffy, the interior lanuginous, separately involving the discal florets. Involucrum consisting of mere leafy, irregular bractes. Achenium compressed, oboval, smooth, and without pappus.—A small, tomentose annual, with entire, sessile leaves, the stem simple, branching simply from the base, or terminating in a proliferous capitulum; the involucrum irregular; flowers in sessile clusters, made up of conglomerations of five capituli, imbedded in a dense cottony tomentum, interspersed with leafy bractes; capituli cylindric-ovate.—(The name from Διαπεραω, *to pass through*. In allusion to the proliferous inflorescence.)

*Diaperia prolifera. Evax prolifera;* NUTT. in DECAND., Vol. V., p. 459.

HAB. On the banks of Red River, near the confluence of the Kiamesha. About two to four inches high. Stem mostly simple, though sometimes branching from the summit of the root. Primary capitulum one half to three-fourths of an inch in diameter, sending out from its disk one to three branches, each terminating in a similar smaller capitulum. There appears to be no proper involucrum, the outermost scales presenting the slender, filiform, female florets. The achenium seems similar with that of *Evax pygmæa.*

*Diaperia? multicaulis. Evax multicaulis;* DECAND. Prod. V., p. 459. This plant I have not seen, but imagine it may belong to the present genus.

## *STYLOCLINE.

Capitulum many-flowered, heterogamous; flowers all tubular; radial feminine, in many series, filiform, (with a mere vestige of corolla,) mostly concealed in a central cleft of the subcarinated, concave, chaffy scale of the receptacle; central masculine florets three or four, four-toothed, minute. Receptacle naked, slender, columnar, wholly bracteolate, the apex producing a few long, chaffy hairs. Involucrum imbricate, of a simple series of (about five) concave, dilated, ovate scales; fructiferous scales broad ovate, membranaceous, with an herbaceous centre, the back and base below densely laniferous. Achenium minute, oblique, cylindric-oblong, very acute at the base, smooth and shining, (apparently a naked seed!?)—Annual herbs of Upper California, with the whole aspect of Gnaphalium; decumbent and diffusely branched from the base, canescently lanuginous, with small, linear, entire, sessile leaves. Flowers in axillary and terminal sessile clusters, of a yellowish white, the scales diaphanous and shining. Seeds, or achenia enclosed in the base of the scales, which are deciduous.—(The name from στυλος, *a column*, and γυνη, *a female*; in allusion to the very singular columnar receptacle.)

*Stylocline *Gnaphaloides.*

HAB. Near Monterrey, Upper California. Stem much branched, diffusely spreading, decumbent, about six inches high, branching from the neck of the root, more or less canescently tomentose. Leaves small, oblong, linear, sessile, three or four lines long, about a line wide. Flowers in terminal sessile clusters, partly sheathed by a number of approximating leaves. Capitulum ovate, made up of imbricated, rhomboidal-ovate, concave, receptacular scales; the involucrum of a

very few similar, empty scales. Scales membranaceous, diaphanous, shining, yellowish-white, with a greenish oblong centre, internally with a cleft fold, usually enclosing the greater part of the floret, and always the seed, on the back, at and towards the base, densely tomentose. The receptacle, from which the fructiferous scales readily become detached, appears to be a narrow punctate cylinder, or rachis, like that of a spike, round which the scales are imbricated. Stigmas bifid, filiform, very slender. Of the floret it is difficult to detect more than a mere hyaline rudiment. Seed (rather than achenium) dark brown, minute, cylindric-oblong, somewhat compressed, obtuse, smooth and shining, very acute at base, with only a single thin integument and its lining, as in a naked seed. Somewhat allied to Evax and Micropus, but at the same time very distinct.

## MICROPUS. (Linn.)

Capitulum few-flowered, heterogamous, flowers all tubular; rays about five, feminine, filiform; discal florets three to five, masculine, five-toothed. Involucrum about five-leaved, conspicuous or minute. Receptacle small, bracteolate, except the centre, the bractes at length cartilaginous, folded inwards closely over the achenium, gibbous and compressed at the sides, (sometimes rostrate,) tomentose. Achenium obovate, flatly compressed, naked, without pappus, and deciduous with the bractes.—Small annuals of Europe and North America, arachnoidly tomentose, resembling Filago or Gnaphalium. Leaves alternate, capituli clustered. The presence of an involucrum, and the supposed involucrum being bractes, this genus approaches *Evax*.

§ III. *Rhyncholepis.—*Involucrum five-leaved, paleaceous, fructiferous scales rostrate, with chaffy points.*

*Micropus *angustifolius;* ⊙ erect, simple or branching from the base, tall and slender, tomentose; leaves linear, acute, above linear-lanceolate; clusters of flowers lateral and terminal, densely lanuginous; discal florets about five, masculine three to five.

Hab. St. Barbara, Upper California. Six to eight inches high, leaves erect and somewhat crowded, about an inch long and a line wide. Stem often simple. The capituli like dense, round masses of wool. Female florets almost obsolete. Stigma scarcely exserted. Achenium smooth and compressed.

## *PSILOCARPHUS.

Capituli many-flowered, heterogamous; flowers all tubular; rays in several series, filiform, feminine; discal florets hermaphrodite, sterile, about five. Involucrum none, or mere foliaceous, irregular bractes. Receptacle convex, elevated, bracteolate, except the centre, bractes gibbous, subcylindric, reticulately membranaceous, folded inwards over the female florets and achenia. Achenium cylindric-oblong, smooth and shining, loosely infolded and deciduous with the bracteoles.—Dwarf annuals of North-Western America, with the whole aspect of Micropus, diffusely branched, and canescently tomentose; flowers glomerate, lateral and terminal.—(The name from ψιλος, *slender*, and καρφος, *chaff*. In allusion to the membranous bracteal scales.)

*Psilocarphus *globiferus;* canescently tomentose, beneath more densely; prostrate and diffusely branched, leaves oblong-linear, the floral ones broader, obtuse; capituli lateral and terminal; female florets twenty-five to twenty-eight; masculine five to eight; scales of the receptacle gibbous, rostrate, involute.—*Micropus globiferus?* DECAND. and BERTERO, Vol. V., p. 460.

HAB. Round St. Barbara, Upper California. Flowering in April. Not an inch high, spreading out five or six inches, beneath covered with a long, soft, white wool, above less densely canescent, centre of the receptacle naked, convex and elevated; masculine florets very minute. Fructiferous scales reticulately membranaceous, not in the least rigid, subcylindric, gibbous, with a short rostrum.

*Psilocarphus *brevissimus;* canescently and very softly tomentose; stem minute and very dwarf, producing mostly a single capitulum; leaves oblong-lanceolate, acute; female florets about eight; fructiferous scale ovate-oblong, without beak; achenium almost linear.—*Micropus minimus?* DECAND., Vol. V., p. 461.

HAB. Plains of the Oregon River, in inundated tracts. Extremely dwarf, (perhaps not always so.) About four lines high, the solitary capitulum, though rather large, sessile on about the third set of leaves, and so downy as to look like a pellet of cotton, the fruit-bearing scale nearly quite straight, scarcely gibbous, larger than usual; the achenium narrow, but longer than in the preceding, to which it, in fact, is closely allied. It does not appear to branch at all, and therefore is scarcely the *Micropus minimus;* which, however, as well as the *M. globiferus*, no doubt belongs to the present genus.

*Psilocarphus* **Oregonus;* every where canescently tomentose, procumbent, and diffusely branched; leaves linear, acute, with minute sphaceolous tips; female florets about twenty-five; masculine five; fructiferous scales uncinate.

Hab. In inundated places near the Oregon and outlet of the Wahlamet. Nearly allied to *P. globiferus*, but with much narrower leaves, and none of the long arachnoid hairs of that species so conspicuous on the under side; the scales of the receptacle are also smaller.

*Psilocarphus* **tenellus;* ascending, slender and much branched, below smooth; leaves spathulate-linear, narrow; capituli mostly terminal, subtended by approximating, canescently tomentose, spathulate-oblong, acute leaves; feminine florets about twenty-five; masculine about five; achenium minute, the scales with uncinate tips.

Hab. Near St. Barbara, Upper California. Flowering in April. About two inches high, slenderly and diffusely branched. Very distinct from the preceding, having very narrow, smooth leaves below, and almost an involucrum of broader canescent leaves above. Flowers minute.

## Tribe IV.—*SENECIONIDEÆ.*

### Division III.—Silphieæ.

### SILPHIUM. (Linn.)

*Silphium* **radula;* exceedingly scabrous; stem terete, leaves alternate, cordate-ovate, acuminate, semiamplexicaule, the lower ones subserrate; flowers few, corymbose, rays about thirty; outer sepals ovate, the inner wide, ovate, obtuse; wing of the smooth achenium very wide, the awns confluent.

Hab. Plains of Arkansa. Allied to *S. Asteriscus.* Three or four feet high, leaves three or four inches long, by one and a half inches wide. Capitulum large, the larger sepals three-fourths of an inch wide.

*Silphium* **speciosum;* stem terete, grooved, smooth and glaucous; capituli corymbose; leaves opposite, the uppermost alternate, cordate-ovate, acuminate, amplexicaule, the lower subserrate, above, as well as the outer sepals, lanceolate, or ovate-lanceolate, the inner broad ovate, acute; rays about twenty-eight to thirty; wing of the smooth achenium very wide, the awns confluent.

Hab. With the above, to which it is nearly allied, though distinct in the leaves being strictly opposite, the stem glaucous, &c. A very showy species, as large, or larger than the preceding.

*Silphium* **lanceolatum;* stem terete, above hirsute, somewhat scabrous; leaves opposite, lanceolate, acuminate, shortly petiolate, repandly dentate,

above nearly entire and sessile; corymb few-flowered, contracted; outer sepals lanceolate, acute, the inner ovate; rays abóut twelve.

Hab. Near Millidgeville, Georgia. (Dr. Boykin, who favoured me with the specimen.) Leaves three to four inches long, about an inch wide, much acuminated. Allied to *S. Asteriscus*.

*Silphium reniforme;* radical leaves reniform-cordate, acute, repand, smooth, beneath very scabrous; stem naked, divaricate; sepals oval, obtuse, smooth; rays about eight.—*S. reniforme;* Rafinesque. Nearly allied to *S. terebinthinaceum*, but with different leaves.

## BERLANDIERA. (Decand.)

### § I. *Silphiastrum.

Discal florets sterile, with a simple clavate stigma. Achenium subelliptic, compressed, externally convex and angular, entire at the summit, and without winged margins or pappus.—Perennial, herbaceous plants of the southern states. More or less softly tomentose or villous; leaves deeply toothed, or sinuately pinnatifid, alternate; capituli solitary or corymbose; liguli yellow, bifid at the apex, externally puberulous, with a very short tube, about ten-nerved, with smooth, elongated, bifid, ligulate, obtuse stigmas. Achenium villous on the inner side.—With the whole aspect of Silphium, but the achenium like that of Encelia compared with that of Helianthus.

*Berlandiera *longifolia;* stem and peduncles lanuginous; leaves ovate-lanceolate, dentate, shortly petiolate, beneath softly villous, not canescent; corymb contracted; capituli pedunculate; involucrum imbricated in nearly a simple series, the sepals ovate; rays eight.—*Silphium reticulatum?* Pursh, but nothing certain can be ascertained from his description.

Hab. On the plains of Red River, Arkansa; rare. About two feet high. Leaves three to four inches long, an inch and a half to two inches wide, rather coarsely toothed, acute, approximate. Sepals leafy, broad ovate. Rays about eight. Peduncles and stem clothed with dense, long and soft hairs, but not canescent or tomentose. Nearly allied to *B. Texana*.

*Berlandiera *pumila;* stem and leaves beneath canescently tomentose; leaves short, cordate-ovate, crenate, sessile, somewhat obtuse; fastigiate branches and summit of the stem corymbose; peduncles long and naked; involucrum in two

series, the inner dilated, ovate, obtuse; rays about twelve, deeply bifid.—*Silphium pumilum;* Mich. Flor. Bor. Am., Vol. II., p. 146. Eighteen inches to two feet high; leaves about as wide as long, an inch to an inch and a half long, whitish beneath. Stem perfectly white and softly tomentose, the pubescence matted and appressed. Primary corymb about four or five-flowered, the peduncles naked, three to four inches long; several branches near the summit of the stem, and two or three from the base of the first corymb. Rays about twelve, twice as long as the disk, deeply bifid, with ten discoloured, longitudinal lines or nerves. Achenium at first villous at the summit, the tufts extending like minute scales, but there appears to me no awns at any time, and the summit of the achenium is entire.

*Berlandiera tomentosa;* stem low and simple, subdecumbent, not canescent, terminating in one, two, or few flowers, above naked; leaves petiolate, oblong-ovate, and cordate-ovate, slenderly crenate, beneath tomentose; rays about eight, more than twice the length of the involucrum, slightly bifid; involucrum in about two series, villous.—*Silphium tomentosum;* Pursh., Vol. II., p. 579.

Hab. West Florida, near Tallahasse. Flowering in March. Less than a foot high, very few leaves on the stem, (two or three,) though softly villous beneath, the leaves are strongly reticulated. Stem terminating in two or three flowers. Sometimes a lateral flower comes out at a later period. Achenium villous and entire, without any vestige of awn.

*Berlandiera subacaule;* decumbent, stem very short, one or few-flowered, peduncles very long; leaves oblong, pinnatifidly lobed, obtuse, below attenuated, slightly hirsute, scabrous on the margin; involucrum puberulous, imbricated in about two series, inner sepals dilated and obtuse; rays about eight, not much longer than the disk, slightly bifid.

Hab. East Florida. About eight to ten inches high; the peduncle more than a span long. Scales of the receptacle very narrow. Achenium villous internally, entire, scarcely angled on the back. Discal stigmas entire, minute; two inner palea adnate to the base of the achenium, with which they secede.

## ENGLEMANNIA. (Gray. MSS.)

*Englemannia *pinnatifida.*

Hab. The plains of Red River. Hirsute and scabrous, radical leaves bipinnatifid, cauline pinnatifid, semiamplexicaule, lower segments longest, linear-lanceolate, dentate, acute, the uppermost nearly entire and small. Stem tall, terete, considerably branched, scabrous; flowers paniculate, numerous, corymbose. Scales of the involucrum diminishing in size to the peduncle; peduncle

long and slender. Scales or sepals yellowish-white, rigid and cartilaginous, strongly ciliate, those which embrace the achenium subcarinate, and splitting at length in the centre down to the base; points of the scales abruptly terminating in narrow, bracteolate, leafy, hirsute, spreading points. Rays eight, about twice the length of the disk, mostly entire, the tube short and narrow. Stigmas of the ray long, ligulate, smooth, bifid. Achenium blackish, convex and strongly carinated on the back, oboval, scabrous and hairy towards the summit, without any vestige of winged margin, crowned by a minute cup, terminated on either side by two very small and hairy awns. Achenium falling off with the scale to which it is attached, and to each of which adheres two receptacular palea, with the stalk like rudiments of the male flowers.

## Division V.—Ambrosieæ. (Decand.)

### Ambrosia *bidentata.*

Hab. Arkansa plains. The uppermost leaves frequently four-toothed on either side, near the base; male involucrum entire, six to eight flowered, with a projecting caudate segment.

### *Ambrosia trifida.*

Hab. Arkansa; in inundated places.

*Ambrosia *longistylis;* scabrous, stem (apparently) simple; leaves pinnatifid, segments oblong-linear, bractes entire; female flowers axillary, conglomerate, with exceedingly long styles, (about an inch;) fruit cornute, spiny at the summit; male flowers about thirty, in a slightly toothed involucrum; the receptacle filiformly paleaceous; cusps of the anthers filiform.

Hab. Rocky Mountains. ⊙. Allied to Franseria.

## FRANSERIA. (Cavan.)

*Franseria *bipinnatifida;* ♃, herbaceous, decumbent and diffusely branched, canescent and sericeous; leaves bipinnatifid, ultimate segments linear, short, obtuse and confluent; male calyx ten to twelve-cleft, many-flowered.—*F. Chamissonis, β. bipinnatisecta?* Lessing, Decand., Vol. V., p. 524.

Hab. Sea-coast of Upper California, (St. Barbara, St. Diego, &c.,) common. Stem diffuse, spreading in a circle of two or three feet, solid, but not woody, brownish. Male florets about thirty; fruit in clusters or racemes, very spiny and pungent, the involucrum pyramidal-ovate; spines flat, often brown, or yellowish. Stigmas filiform, rather long and acute. Anthers, (in the manner of the genus,) with filiformly acute tips.

*Franseria *pumila;* ♃, sericeously canescent, root creeping; stem erect; very low and short; leaves tripinnatifid, ultimate segments short, linear-oblong, confluent; male calyx about five-cleft; spines of the fruit not exserted.

Hab. Near St. Diego, Upper California. Not more than six inches high, very softly and copiously pubescent; segments of the leaves crowded. Stem slender, simple, scarcely extending beyond the bosom of the radical leaves; male spike about two inches long; involucrum about ten or twelve-flowered, five-toothed; receptacle with linear palea, pubescent at the tips.

*Franseria *discolor;* 2, root creeping; leaves interruptedly bipinnatifid, above nearly smooth, canescently and closely tomentose, segments subovate, acute, confluent in the wide rachis; stem short, with the lateral branches decumbent.

Hab. In the Rocky Mountains, near the Colorado of the West. A very remarkable and distinct, as well as elegant species. Stem about a span long, slightly pubescent; leaves on long petioles, with a lanceolate outline, acute, about six inches long, white beneath, green above, the pinnatifid segments lanceolate, the rachis incisely toothed. Male florets rather numerous; receptacle with narrow, pubescent palea; involucrum about five or six-toothed; female flowers few, fruit spiny.

*Franseria *cuneifolia;* 2, softly sericeous and somewhat canescent; stem simple, decumbent, pilose; leaves cuneate-oval, dentate, long petiolate, three to five-nerved at base; male florets very numerous, the scales hirsute at the tips; spines of the fruit rigid, sublanceolate; male involucrum ten to twelve-toothed. —*F. Chamissonis?* Lessing, Decand., Vol. V., p. 524.

Hab. Outlet of the Oregon, near the sea. A very remarkable species. Stem succulent, about two feet long, many from the same root; leaves about an inch wide, two and a half to three inches long, the peduncle as long as the leaf. Fruit axillary, crowded, and, as in *F. bipinnatifida*, glandular, with resinous atoms. Achenium large, oblong-oval.—In all the preceding species the corolla is five-toothed.

§ * Ambrosidium.—⊙ *Palea of the receptacle very slender and deciduous.*

*Franseria *montana;* ⊙, scabrous, and somewhat canescent with appressed hairs; stem branching, flowers paniculate, racemes lateral and terminal; leaves bipinnatifid, confluent towards the summit, segments oblong or subovate, abruptly acute; involucrum five to eight-cleft, naked, about ten to twenty-flowered; fruit ovoid, thickly covered with long, smooth, flat spines.

Hab. In the Rocky Mountains, near the Colorado of the West. One to two feet high; stem scabrous, leaves softish to the touch, with closely appressed hairs; chaff of the involucrum deciduous, or wanting, rachis of the leaves wide.

*Franseria Hookeriana. Ambrosia acanthocarpa;* Hook. Flor. Bor. Am., Vol. I., p. 309. Distinguished from the preceding chiefly by the few linear seg-

ments of the leaves, which are nearly smooth above, all of them linear, with the fruit lanceolate, acute, and having much fewer spines; there are only vestiges of palea on the receptacle; most part of the plant is clothed with sparse, white hairs, wholly absent in the preceding.

## Division VI.—Iveæ. (Decand.)

Iva *ciliata.*

Hab. Arkansa. The old plant becomes extremely scabrous; achenia turgid, oboval.

*Iva axillaris;* leaves mostly alternate, somewhat carnose, linear-oblong, or cuneate-oblong, obtuse, nearly smooth, one-nerved; capituli solitary, axillary, nutant; involucrum of about five nearly separate, ovate sepals. Hook. Flor. Bor. Am., Vol. II., p. 309, t. 106.

Hab. On the borders of the Platte and Missouri.

*Iva *foliolosa;* lower leaves opposite, the upper alternate and smaller, all, as well as the stem, more or less appressed pilose, three-nerved, lanceolate or oblong-lanceolate, subacute; flowers towards the summit of the stem, solitary, axillary, nodding; involucrum campanulate, five-lobed.

Hab. On the Rocky Mountain plains. *I. axillaris*, β., Hook. Flor. Bor. Am., Vol. II., p. 309. Probably Pursh's description is made up of both these species, though on the Missouri I saw only the preceding, of which a specimen was communicated to the Lambertian Herbarium. The present plant has a very different leaf and involucrum, and often presents, as it were, a leafy spike, as mentioned by Hooker.

*Iva angustifolia.*

Hab. Arkansa. Capitulum minute, about four-flowered, three masculine, one feminine. Flowers in a paniculated, leafy spike.

*Iva *microcephala;* slender and virgately branched, very smooth; leaves narrow linear, almost filiform, entire and fleshy; capituli axillary, very small; sepals about five, distinct; florets about six, three of them female.

Hab. In Florida. (Dr. Baldwin.) A remarkable species for the minuteness of its flowers and leaves, the latter about half an inch long, half a line wide. The capitulum not much larger than an ordinary pin's head.

### § I. *Picrotus.

Flowers dioicous, one plant producing masculine flowers only with minute rudiments of fruit, the other with monoecious capituli, the radial florets without corolla, the stigmas exserted, slender and filiform. Receptacle naked.

Achenium oboval, compressed, but somewhat turgid.—Tall annuals with opposite, ovate, serrated leaves, hirsutely canescent beneath; the flowers in terminal, naked, spiked panicles; in the fertile plant the spikes are filiform and interrupted.—Almost intermediate with *Ambrosia* and *Iva*.—(The name from πικροτης, *bitterness;* in allusion to the qualities of the plant.)

*Iva * paniculata.*

Hab. In the Rocky Mountains, by streams, in alluvial wastes. A rather tall annual, with long, petiolated leaves; the stem simple, terminating in a naked, branching, pyramidal panicle of greenish, inconspicuous flowers. Involucrum about five-leaved, obtuse; male capitulum about fifteen-flowered, with minute rudiments of female flowers; in the fertile capitulum the female flowers are about eight.

*Iva xanthifolia;* ⊙, leaves lanceolate-ovate, serrate, acuminate, long petiolate, appressed pilose, and canescent beneath; capituli somewhat spiked; sepals ovate, acuminate.—Nutt. Gen. Am., Vol. II., p. 185. Decand., Vol. V., p. 529. Nearly allied to the preceding.

## Division.—Partheniæ.

### *Bolophyta.

Capituli many-flowered, heterogamous; rays feminine in one series, about five, ligulate, nearly tubular, very short, truncated and crenulate; radial florets tubular, five-toothed, masculine, with a simple stigma. Involucrum hemispherical, biserial, external scales ovate, internal suborbicular. Receptacle conic, paleaceous, the palea sheathing, wider and pubescent at the summits. Stigmas of the ray short, smooth and obtuse. Achenium compressed, somewhat obcordate, with a cartilaginous margin, to which it is ingrafted on either side with the two anterior paleæ, and with which, and the contiguous scale of the involucrum, it is at length deciduous. Pappus none, the achenium crowned with the small, persisting ligula.—An alpine, cæspitose, stemless, small perennial, with a long, almost ligneous root, crowned with dense and numerous vestiges of former leaves, based by tufts of hairs; leaves spathulate-linear, narrow and entire, canescent with appressed, strigose hairs; flowers solitary, sessile, or short pedunculate, scarcely arising beyond the sum-

mit of the root, and hid among the leaves.—Nearly allied to *Parthenium*, though of the most dissimilar habit, and perfectly distinct.—(The name from *βωλος*, *a clod*, and *φυτον*, *a plant;* in allusion to the depressed and cæspitose growth.)

*Bolophyta alpina.*

Hab. In the Rocky Mountain range; latitude about 42°, and seven thousand feet above the level of the sea. On shelving rocks, on the summit of a lofty hill, near the place called the "Three Butes" by the Canadians, towards the sources of the Platte. Flowering in June. Root fusiform, stout and very long, sending off several closely-matted crowns of leaves. Leaves about an inch or an inch and a half high, scarcely a line wide, linear and acute, attenuated below, coming out in rosulate clusters, equally pilose on either side, without any visible vessels but the mid-rib, so that the leaf appears nearly the same on either side. Capitulum sessile, or upon a very short and thick peduncle, somewhat larger than that of *Parthenium integrifolium*, but still very similar. Scales of the involucrum ten, five external, ciliate and pubescent at the summit; receptacular scales similar but narrow, also pubescent at the tips, each enfolding a male floret, with the five-toothed summit visible. Anthers dark brown, united, enclosing a very small style, with a simple, obtuse, scarcely pubescent stigma. Radial florets ochroleucous, (as well as the discal) short and tubular, appearing truncate, the border a little spreading and slightly crenulate, with scarcely any anterior cleft. Stigmas not exserted beyond the short ligula. Achenium black when ripe, with a whitish border.

*Parthenium integrifolium.*

Hab. In Arkansa.

## Subtribe II.—*HELIANTHEÆ.* (*Less. Decand.*)

### Division I.—Heliopsideæ. (Decand.)

Zinnia **grandiflora;* ☿? dwarf; leaves linear lanceolate, connate, scabrous on the margin; stem much branched from the base; rays (yellow) very large, orbicular-oval; scales of the involucrum rounded; paleæ fimbriate; discal fruit with a single awn.

Hab. In the Rocky Mountains, towards Mexico.—A very distinct and splendid species, apparently perennial. The only specimen I have (presented me by my friend, Dr. Torrey,) is scarcely more than five inches high; the stem somewhat hirsute; leaves about an inch long, two to three lines wide, three-nerved below; branches one-flowered; involucrum of about three series of dilated, roundish scales. Rays yellow, orbicular, or widely oval, appearing cordate at base, and there plaited, three-fourths of an inch wide; style of the ray filiform, smooth, exserted, bifid. Disk apparently orange.

## BALSAMORHIZA. (*Hooker*, under HELIOPSIS.)

Capitulum many-flowered, heterogamous; rays feminine, ligulate, in one series, with infertile filaments of stamens; discal florets hermaphrodite, tubular, the summit five-cleft, reflected. Involucrum imbricate in two or three series, foliaceous, longer than the disk. Receptacle convex, the palea lanceolate, foliaceous, pungently acute, subcarinate, and embracing the fruit. Achenium subquadrangular, in the ray compressed, smooth, wholly naked, with a small epigynous disk. Stigmas filiform, hirsute, subobtuse.—Low, robust, perennial herbs of the western alpine steppes, and plains of Oregon and California. Leaves entire, or pinnately dissected, nearly all radical. Stems scapoid, one or few-flowered, the lower pair of small leaves opposite; above alternate; capituli wholly yellow, resembling that of *Helianthus*. Nearly allied to Heliopsis, but without proper stems, and wholly dissimilar in habit. Root fusiform, stout, black, and very long, terebinthine, internally darkish. Used by the aborigines of the west as an article of diet, after subterraneous stoving, when it acquires a sweet flavor, like that of the parsnip.

§ I. EUBALSAMORHIZA.—*Leaves pinnatifid, scapes or stems one-flowered; rays ten to fourteen.*

*Balsamorhiza Hookerii;* softly and almost sericeously pubescent; leaves more or less bipinnatifid and incise, segments linear; involucrum subtriserial; sepals narrow-lanceolate, acuminate, loosely imbricate, external ones spreading. *Heliopsis balsamorhiza;* HOOKER, Flor. Bor. Am., p. 310.

HAB. Plains of the Oregon, common. Twelve to eighteen inches high. Summit of the cylindric, naked tap-root surrounded by long, brown, membranous bud sheathes. The root, when cut, exuding drops of a very limpid resin.

*Balsamorhiza terebinthacea. Heliopsis terebinthacea;* HOOK. Flor. Bor. Am., p. 310. With this, if more than a variety of the preceding, I am unacquainted. The leaves of the preceding vary sufficiently.

*Balsamorhiza * hirsuta;* somewhat hirsute, not canescent; leaves all bipinnatifid, except at the summit; segments oblong, incise, margin very scabrous;

scape hifoliate; capitulum large, subglobose, imbricated in about four series, lanuginous at base; sepals lanceolate, acute, ciliate; root clad with persistent fibres.

Hab. Dry plains east of Walla-Walla, near the Blue Mountains, and in the Grand Ronde prairie. Nearly allied to the preceding, but with a very different pubescence; also a more robust and dwarf plant, with a much larger capitulum. I have not seen it in flower, only in seed. Leaves about a foot long, two to three inches wide, very lanuginous at the base of the petiole, which is very flat. Sepals nearly all equal, closely imbricated. Florets of the ray very numerous. Stigmas long and hirsute. Leaves green, not at all canescent and soft, as in the preceding.

*Balsamorhiza *incana;* canescently tomentose; scape scarcely longer than the leaves, bifoliate at base; leaves deeply pinnatifid; segments oblong or ovate, entire or denticulate externally; involucrum densely tomentose, bi or triseriate.

Hab. In the Rocky Mountains. About six to eight inches high. A beautiful and very showy species, with flowers as large as *Inula Helenium*, of a deep yellow, the whole herbage white with soft down. The leaflets oblique, often bilobed. Rays twelve to fourteen, with infertile filaments, as in the preceding species. Scales of the receptacle very short. Stigmas hirsute, filiform, and exserted.

*Balsamorhiza *macrophylla;* smooth; scape about the length of the leaves, bifoliate at base; leaves deeply pinnatifid, confluent above; segments sublanceolate, acute, entire, or with one or two large teeth at base; involucrum about triserial; sepals lanceolate, the lower ones leafy and reflected; paleæ nearly equal in length with the florets.

Hab. Towards the sources of the Colorado of the west, in the Rocky Mountains; rare. Remarkable for its large, smooth leaves, scabrous on the margin, and scattered with glandular atoms. Petioles very long, with the leaf near a foot in length, segments three inches long, half to three-fourths of an inch wide.

§ II. *Artorhiza.—*Leaves entire, deltoid or cordate; involucrum very leafy at base; rays numerous. Receptacle flat.*

*Balsamorhiza sagittata. Buphthalmum sagittatum?* Pursh., Vol. II., p. 564. *Espeletia sagittata;* Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 39. Canescently tomentose; stem low, about one to three-flowered; radical leaves cordate-ovate, entire, somewhat three-nerved at base; cauline leaves linear, attenuated below; external leaves of the involucrum longer than the inner, spreading, lanceolate, densely tomentose; rays numerous, (twenty to twenty-four.)

Hab. In the Rocky Mountains, by Flat-Head River, towards the sources of the Oregon.

Flower large and showy, about three to four inches in diameter, while the scapoid stem is not more than a span high. Stigmas very hirsute, filiform. Rays feminine, with infertile filaments.

*Balsamorhiza helianthoides. Espeletia helianthoides;* NUTT. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 39. Certainly not congeneric with Humboldt's genus. Allied closely to the preceding, but with a different pubescence and closely imbricated, lanceolate, acuminate sepals. Rays with infertile filaments, about fifteen.

*Balsamorhiza * deltoidea;* slightly hirsute and puberulous; leaves deltoid-cordate, acuminate, somewhat undulate; stem one to three-flowered, upper leaves alternate, linear-oblong; sepals linear-lanceolate, the outermost longest and leafy, spreading; rays twelve to twenty.

HAB. Near the outlet of the Wahlamet, common, in wet, open places. Flowering in June. Much like an *Helianthus*, and nearly allied to the preceding, but not tomentose, wholly green, and the leaves more triangular, two to three inches across, four or five inches long, on very long petioles. Stem leaves small, oblong, scarcely opposite, long petiolate. Rays with infertile filaments.

## WYETHIA. (NUTT., Journ. Acad. Philad., Vol. VII., [1834.])

ALARÇONIA, *Decand.* in part.

Capitulum many-flowered, heterogamous; rays numerous, feminine, with rudiments of stamens, (filaments;) radial florets tubular, the summit five-cleft, revolute. Stigmas ligulate, filiform, hirsute on the under side, not conic at the apex. Involucrum hemispherical, foliaceous, loosely imbricated in two or three nearly equal series, longer than the disk, the inner leaves wider. Receptacle convex, paleaceous, the palea foliaceous, carinate, embracing the fruit. Achenium subquadrangular, striated or grooved, in the ray compressed. Pappus a small, cartilaginous, multifid, unequal crown, naked, or with one to four stout awns arising from the angles.—Dwarf or robust, Helianthoid plants, with long tap roots, and simple, mostly one-flowered, leafy stems, the leaves large. Flower large, ray and disk yellow.

*Wyethia Helianthoides;* very dwarf, somewhat hirsute, one-flowered; stem leaves and sepals ciliate; leaves lanceolate, entire, scabrous on the margin, attenuated below into a petiole; outer sepals of the involucrum linear, the inner

lanceolate; pappus scales obtuse, with or without a single subulate awn; achenium grooved, hirsute at the summit; stigma slender.

Hab. In the Kamas plains, near Flat-Head River, towards the sources of the Columbia, and in the plains near the Blue Mountains of Oregon. About a span high. Stem simple, one-flowered, smooth below, almost lanuginous at summit; sepals lanuginous and ciliate on and near the margin. Scales of the receptacle lanceolate, hirsute, pungent, nearly the length of the discal florets, sometimes with a short tooth on either side. Achenium angular, but so much grooved as to appear nearly terete. Pappus variable, the multifid crown pubescent, of eight or ten unequal segments, always present; in others there is, besides, on one of the angles, a slender awn. Rays eighteen to twenty, entire, pale yellow, with infertile filaments.

*Wyethia *angustifolia;* very dwarf, softly pubescent; stem one-flowered; sepals pilose, ciliate, the outer broadest, lanceolate; leaves spathulate or spathulate-lanceolate, entire; pappus scales acute, lacerate, with a single awn at one of the angles; achenium quadrangular, nearly even, smooth; stigma very long, flat and revolute. *Alarçonia angustifolia;* Decand. l. c.

Hab. Round Monterrey, Upper California. A dwarf species like the last, with a disproportionately large capitulum; the rays deep yellow, about twelve, distinctly three-toothed, with filaments of stamens. Stigmas remarkable for their length, ligulate, smooth above, hirsute below with golden hair. Radial floret contracted at base. About a span high, lower part of the stem, near its base, smooth.

*Wyethia *robusta;* somewhat scabrous and pubescent, particularly the base of the stem, which is one-flowered; leaves all lanceolate, acute, radical subserrate, stem leaves sessile; sepals nearly all equal, lanceolate or linear-lanceolate, acute; achenium quadrangular, nearly even, with one to four unequal awns; stigma long and flat.

Hab. Plains of the Oregon, near the confluence of the Wahlamet, common, in wet places. Flowering in June. Eighteen inches to two feet high; always with a single flower. Radical leaves a foot long, attenuated, and very hairy on the petiole, as well as more or less so on the mid-rib, nearly entire, or irregularly serrate, acute. Rays twelve to eighteen, twice as long as the disk, and exceedingly like that of an Helianthus. Achenium sharply quadrangular, even, except a groove on one side, slightly pubescent at the summit; crown of pappus in eight or ten divisions, lacerate, often presenting from one to four awns, unequal, but not all of them on the angles. Receptacle convex.

*Wyethia amplexicaulis;* smooth, shining, and somewhat glutinous; leaves lanceolate, acute, entire or subserrulate, cauline ones amplexicaule; stem three to five-flowered, flowers axillary and terminal, pedunculate; sepals broad ovate;

achenium subquadrangular or triangular, grooved; pappus acute, one or two of the segments carried out into awns. *Espeletia amplexicaulis;* NUTT. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 38.

HAB. In the Rocky Mountains. Flowering in June. Since publishing an account of this plant in the seventh volume of the Journal of the Academy of Natural Sciences in Philadelphia, I have, myself, met with it in the Rocky Mountains, towards the sources of the Platte, from which specimens I find that, though differing some in habit, it belongs to the genus Wyethia. Stem sometimes two or more feet high, robust, and very smooth even to the margin of the leaf; the lower, or radical leaves, at length coriaceous, attain a foot in length, are attenuated below, and, though often entire, are sometimes serrulate; lower stem leaves sessile, the upper semiamplexicaule; flowers in a sort of short, approximating raceme; sepals very broad; rays ten to fifteen; achenia and palea smooth. Stigmas slender, hirsute externally.

### § I. ALARÇONIA. *Pappus without awns.*

*Wyethia Helenioides. Alarçonia Helenioides;* DECAND., Vol. V., p. 537. Collected in Upper California, by Douglas. Nearly allied to *W. Californica*, but evidently a much larger plant. OBS.—The leaves of all the species are alternate.

## HELIOPSIS. (*Persoon.*)

Capitulum many-flowered, heterogamous; rays ligulate, feminine, in one series; florets of the disk hermaphrodite, tubular, five-toothed. Stigmas slender, filiform, pubescent at the summit, and terminating in a smooth, acute cone. Involucrum somewhat biserial, shorter than the disk; sepals foliaceous at the summit, cartilaginous, closely imbricated and coalescent below. Receptacle conic, palea membranaceous, embracing, much shorter than the florets. Achenium quadrangular, smooth, without pappus, but with a raised border, and a small, epigynous disk.—Tall perennial herbs of North America, with ovate, opposite, petiolate, dentate leaves. Capituli solitary, pedunculate; flowers yellow, with elongated rays.

*Heliopsis scabra.*

HAB. Arkansa; common. With the stem sometimes nearly smooth.

*Heliopsis * gracilis;* smooth, leaves oblong-ovate, at either end acuminate, incisely serrate; peduncles very long and slender; involucrum subsquarrose; sepals lanceolate, pubescent on the margin.

Hab. In Georgia. (Dr. Juet.) Flowers pale yellow, small. Nearly allied to *H. lævis*. but as distinct as *H. scabra*, and differing from both in the involucrum.

## Division Rudbeckieæ.

Echinacea *pallida*. - *E. angustifolia;* Decand., Vol. V., p. 554. *Rudbeckia pallida;* Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 77.

Hab. In Arkansa. Flowers pale rose, almost white.

*Echinacea atrorubens*. *Rudbeckia atrorubens;* Nutt. in Journ. Acad. Philad., Vol. VII., p. 80.

*Echinacea* * *sanguinea;* hirsute, but not canescent; stem mostly one-flowered, scabrous below, smooth above, sometimes branching from near the base; radical leaves elliptic, the rest lanceolate, acute, petiolate, mostly entire; flower very long pedunculate; sepals oblong-lanceolate; rays narrow and dependent, shortly bidentate.

Hab. The plains of Red River, near the confluence of the Kiamesha. A very elegant and distinct species, with dark red rays. Allied to *E. pallida*, but the leaves less whitely hirsute, the rays narrower and deep coloured, &c. Lower part of the stem leafy, leaves moderately attenuated below, three-nerved, narrow lanceolate, apparently entire. Rays about fifteen. Capitulum hemispheric, but not conic. About two feet high; the naked part of the stem, or peduncle, about two-thirds the whole length.

## RUDBECKIA. (Cassini.)

Rudbeckia * *strigosa;* 4. Stem hispid, somewhat smooth above, branching from below, the branches one-flowered, fastigiate; leaves sessile, amplexicaule, ovate sublanceolate, below oblong serrulate, softly strigose with appressed hairs, and somewhat cinereous; peduncles elongated; rays about eight, oblong, rather short; sepals spreading, in two rows, oblong-lanceolate; disk hemispherical.

Hab. Alabama. (Dr. Juet.) A rather remarkable species, almost hoary with a close clothing of softish, appressed, and rather long hairs; the serratures minute, except on the lowest leaves. Allied to *R. hirta* and to *R. mollis*, of Elliott, but the rays are broad and short, not more than eight. Chaff of the receptacle linear, rather obtuse.

*Rudbeckia* * *maxima;* smooth, robust and glaucous, very tall; leaves all entire, very broad and large, radical ovate petiolate; lower stem leaves obovate,

abruptly acuminate, subserrate; upper ones broad ovate, amplexicaule; stem one or few-flowered; peduncle very long, sulcate; rays reflected, numerous. (fifteen to twenty;) disk columnar.

Hab. On the open plains of Red River, near the confluence of the Kiamesha. Flowering in June. A gigantic plant, growing in extensive masses, with large, glaucous, somewhat coriaceous leaves, but little inferior in size to those of the Cabbage, in its wild state. Leaves somewhat oval, three to four inches wide, except the upper ones, which diminish to a quarter part the size of the lower ones: its whole aspect and clasping leaves appear very similar to that of *Dracopis*. Six to nine feet high! and all the parts (the flower not excepted) of the same gigantic dimensions, although growing in a poor and exhausted soil. Rays oblong, nearly entire; discal column one and a half to two inches long, three-fourths of an inch wide. Paleæ oblong, sheathing. Leaves of the involucrum in nearly a simple series, foliaceous.

*Rudbeckia globosa*, Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 79, is *Obeliscaria Tagetes* of Decandolle. *Rudbeckia Tagetes*, James, which name has the priority.—Obeliscaria appears to be almost a mere section of Rudbeckia. The *O. pinnata* is indeed closely related to *Rudbeckia digitata*, if, indeed, the latter be any thing more than a variety of *R. laciniata*. The distinguishing character of a compressed achenium is merely comparative, and glides insensibly into the unequal quadrangular one.

§ *Akosmia.†—*Rays wanting; pappus a minute, crenate cup; receptacle elevated. conic.*

*Rudbeckia *occidentalis;* smooth and robust; leaves ovate-lanceolate, acuminate, entire, or repandly toothed, sometimes irregularly lobed, scabrous on the margin, three-nerved; uppermost sessile, lanceolate, entire; flowers few, long pedunculate, without rays; disk conic; sepals lanceolate, acuminate, in nearly a single series.

Hab. Rocky Mountains and woods of the Oregon, particularly in the Blue Mountain range, by small streams. Allied to *R. laciniata*, of which it has almost the achenium and paleæ. About three feet high. Leaves four to six inches long, much acuminated, the upper sometimes irregularly two-lobed, two to three inches wide, attenuated below, but sessile. Disk dark purple; paleæ linear, sheathing, somewhat obtuse; achenium quadrangular. The only western species we have seen.

† From αχοσμος, *without ornament;* in allusion to the want of rays.

## *ECHINOMERIA.

Capitulum hemispherical, many-flowered, homogamous or heterogamous; rays neutral, (yellow,) spreading, rather short, (about eight;) discal florets hermaphrodite, with the border five-cleft, the tube contracted, shorter than the border. Involucrum in about three series, the sepals nearly equal, lanceolate and discoloured, similar with the palea. Receptacle convex, alveolate, denticulate, paleaceous, the paleæ lanceolate, carinate and embracing, acuminate, and deciduous, about as long as the florets. Branches of the stigma subulate, hirsute. Achenium tetragonal, compressed, crowned with a minute, deciduous, chaffy pappus, two of the angles somewhat toothed.—A perennial, opposite-leaved herb, with the aspect of an *Helianthus*. Stem very hairy below, almost naked and scapiform above, one-flowered; capitulum blackish-purple, mostly without rays, which, when present, are yellow. (The name in allusion to its affinity to the genus ECHINACEA.)

*Echinomeria apetala. Rudbeckia apetala;* (YATES and TORREY.) NUTT. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 77. *Helianthus apetalus;* LECONTE, in Herb. Schweinitz.

HAB. In the pine barrens of Georgia, near ponds and pools. Perennial. Radical leaves widely ovate and short, sessile, somewhat hirsute, three-nerved and denticulate. Leaves opposite, crowded towards the base of the stem, which is very hairy; the rest of the stem, for about two feet, nearly smooth, and like a scape, almost leafless; one or two upper minute leaves linear and alternate, a lower pair lanceolate, opposite and sessile. Capitulum hemispherical, resembling almost wholly that of *Helianthus atrorubens*, but mostly without rays. Sepals in three rows, nearly equal, lanceolate, acuminate, nearly smooth, dark purple, faintly three-nerved; paleæ acuminate, narrow lanceolate, mostly with a narrow, acute tooth on either side. Achenium with two obtuse angles, rather rough, with pale spots, at first with the rudiments of four unequal, blunt teeth, and an inner, irregular crown of pilose, minute, unequal paleæ, all of which disappear with the ripe fruit, when the two obtuse angles only present short, obtuse dentures. It is difficult to say whether this plant more resembles Helianthus or Echinacea, it is so entirely intermediate with those genera; the aspect is that of the latter, but the paleæ are not pungent, and the rays yellow.

*Continuation of Mr. Nuttall's Paper. Read December* 18, 1840.

---

## ENCELIA. (Adanson.)

Encelia * *Californica;* suffruticose, erect, and much branched; branches elongated, one-flowered, puberulous; leaves ovate-lanceolate, acute, entire, or coarsely toothed towards the base, nearly smooth, three-nerved, rather crowded, scabrous on the margin; involucrum villous, triserial.

Hab. On dry hills, near St. Barbara, Upper California. Flowering in April; common. A rather showy, low, brittle shrub, with the flowers of an Helianthus; the rays neuter, fifteen to twenty, three-toothed, and somewhat plaited. Leaves alternate, attenuated into a marginated petiole; young stems and shoots canescent with an almost pulverulent pubescence; peduncle rather long. Stigmas lanceolate-ovate; palea membranaceous, sheathing; the achenium, which is flat, obconic, without pappus, slightly emarginate and sericeous on the summit and margin. Florets of the disk dark brown, smooth. The whole plant possesses the odor of *Gailardia bicolor*.

### Division Coreopsideæ. (*Less.*)

## COREOPSIS. (Linn.)

To Decandolle's description of the genus I may remark that the paleæ of the receptacle are deciduous.

Eucoreopsis.—*Achenium flatly compressed, winged, apex bidentate.*

1. *Coreopsis dephinifolia;* Lamarck. 2. *Coreopsis tenuifolia;* Ehret, Willd. Sp. pl. l. c. 3. *Coreopsis Wrayi;* Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 76. Nearly allied to *C. dephinifolia*.

Chrysomelea.—*Achenia suborbicular, bidentate, winged, at length convex and incurved.—Leaves entire or pinnately dissected.*

† *Leaves entire or auriculate.*

3. *Coreopsis lanceolata;* Linn. 4. *Coreopsis crassifolia;* Aiton. 5. *Coreopsis integrifolia;* Poiret. (*C. Œmleri;* Elliott.)

6. *Coreopsis auriculata;* Linn. 7. *Coreopsis diversifolia;* Decand., Vol. V., p. 571.

†† *Leaves pseudopinnate.*

8. *Coreopsis grandiflora;* (Nutt. MSS. Sent by that name to Mr. Barclay.)

Hab. Banks and plains of the Arkansa. *C. longipes;* Hooker, Bot. Beech. l. c.

9. *Coreopsis * heterophylla;* 2, smooth; stem erect, branching, grooved; radical leaves entire, spathulate-oval or trifid; stem leaves opposite, sessile, ciliate at base, biternately dissected, above three-parted; segments narrow linear, entire; peduncles elongated, one-flowered; external sepals lanceolate, shorter than the inner; rays unequally four-lobed; achenium suborbicular, winged, shortly toothed.

Hab. With the preceding, to which it is intimately allied; the flower smaller and the leaflets narrower. Achenium, as in the preceding, with an internal tubercle at the summit and base within.

10. *Coreopsis * Boykiniana;* 2, smooth and erect, the summit trichotomous; stem angular and grooved; leaves opposite, entire, linear-lanceolate, long petiolate, acute, one or two upper cauline pair unequally trifid and petiolate; peduncles one-flowered, very long; external sepals lanceolate, acute, about half the length of the inner; rays four-lobed; achenium even, with a broad wing, shortly bidentate.

Hab. Near Millidgeville, in Georgia; collected by my friend, Dr. Boykin, after whom I have great pleasure in naming it. Achenium very similar to that of the two preceding, and internally bituberculate with a broader winged margin. Flower large, rays eight. Involucrum enlarging with the fruit; paleæ narrow and deciduous. A distinct species, though allied to the preceding.

§ *Gyrophyllum.—*Rays entire, or slightly toothed. Achenium oblong-compressed, straight, winged, often with an obsolete, minute, chaffy crown, scarcely bidentate when mature.—Leaves trifid, mostly equal, and appearing verticillated or stellate.*

11. *Coreopsis senifolia;* Michaux. 12. *Coreopsis stellata;* Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 76.

13. *Coreopsis rigida;* Nutt. Gen. Am., Vol. II., p. 180. Smooth, or nearly so; leaves equally trifid, or sometimes with the central segment also three-cleft; leaflets lanceolate-linear, entire, scabrous on the margin; outer sepals of the involucrum linear, about twelve!

14. *Coreopsis palmata;* NUTT. Outer sepals linear, about twelve; rays eight, nearly entire. Achenium oblong, flat, alated; in an immature state with two minute teeth. A strict congener with the preceding. 15. *Coreopsis tripteris,* LINN. *Chrysostemma tripteris;* LESSING. Syn. 227. DECAND., Vol. V., p. 567.—PERAMIBUS of Rafinesque is thus far, to me, a nonentity!

§ *EUBLEPHARIS.—*Achenium oblong-compressed, straight, carinated, with a ciliate-serrated callous margin and base, the apex with two short awns, scarcely longer than the serratures; rays three-lobed, the middle lobe longer.—Leaves alternate, entire, linear; corymb unequal, dichotomal. Probably a genus?*

16. *Coreopsis gladiata;* WALTER.

HAB. Georgia and Fayette, North Carolina. Outer involucrum short; radical leaves spathulate-oblong, obtuse, somewhat fleshy; cauline narrow linear, remote and few; flowering branches nearly naked.

§ *RABDOCAULIS.—*Achenium linear-oblong, straight, compressed, minutely ciliated on the margin, with a pappus of two erect, somewhat scabrous bristles. Rays almost equally three-lobed.—Leaves entire, opposite and alternate; outer involucrum small.*

17. *Coreopsis angustifolia;* AITON. Leaves alternate, the radical lanceolate, long petiolate, carnose, cauline linear, remote; corymb dichotomous, few-flowered.

18. *Coreopsis linifolia;* NUTT. From a specimen collected in Alabama by my friend, Dr. Juet, I find that the lower oblong leaves are *alternate* and remote. The flowers disposed in an irregular corymb; outer involucrum about one-third the length of the inner. Inner sepals ovate-lanceolate, acute. Rays about eight, deeply three-lobed. Achenium linear-oblong, straight, compressed, minutely ciliated on the margin, with a pappus of two erect, long, equal bristles. The plant three to four feet high. Stem leaves opposite, linear, about a line wide, one to two inches long, and very remote, so that the stem appears almost like a naked twig. Flower conspicuous, yellow, with a brown disk.

19. *Coreopsis nudata;* NUTT. Awns of the achenium pubescent, very short; stigmas obtuse, pubescent at the extremity. The whole plant almost destitute of visible leaves.

§ CALLIOPSIS.—*Achenium compressed, flat, naked, incurved; stigma truncated, the tip only pubescent. Exterior involucrum very short. Rays two-coloured; leaves bipinnately dissected.*

20. *Coreopsis tinctoria;* NUTT. 21. *Coreopsis cardaminifolia;* DECAND. (under CALLIOPSIS.) 22. *Coreopsis Atkinsoniana;* HOOKER.

23. *Coreopsis rosea;* smooth, stem trichotomous; leaves linear, narrow and acute, opposite, entire, rarely trifid; rays unequally three-toothed, (rose-red;) peduncles slender, rather long; achenium immarginate, entire, naked, curved.

**HAB. New Jersey, near the sea-coast. Stigmas truncated, scarcely pubescent.**

## *DIODONTA. (COREOPSIS of authors.)

COREOPSIS, but with the outer involucrum as long, or longer than the inner, from eight to twenty-four leaved, the inner about eight-leaved. Achenium cuneate, compressed, flatly four-sided, immarginate, with two cornute, acute, hispid, but not retrorse teeth. Rays nearly entire.—Annuals or biennials, usually with pseudopinnated, opposite leaves, mostly serrated, rarely entire. Intermediate between Coreopsis and Bidens, andwith much the habit of the latter.—(Named in allusion to the pappus.)

*Diodonta coronata.* *Coreopsis coronata;* LINN., (fide GRAY.) *Coreopsis trichosperma;* MICH. Awns as long as the discal florets, pilose with erect hairs.

*Diodonta mitis.* *Coreopsis mitis;* MICH. Flor. Bor. Am., Vol. II., p. 140. *Coreopsis ambigua;* NUTT. in Journ. Acad. Nat. Sci. Philad., VII., p. 76. Awns short, scarcely exserted.

**HAB. In Alabama.**

*Diodonta aurea.* *Coreopsis aurea;* AIT. Hort. Kew., Ed. 1, Vol. III., p. 252.

*Diodonta aristosa.* *Coreopsis aristosa;* MICH. Flor. Bor. Am., Vol. II., p. 140. Awns very long and divaricate.

*Diodonta *leptophylla;* smooth, erect, dichotomously branched; leaves pseudopinnate, with few, linear, and mostly entire segments, the terminal one elongated; peduncle dichotomal, very long; achenium short, cuneate, scabrous, with two short, rather smooth horns.

Hab. Georgia. (Dr. Baldwyn.) A small species, about a foot high, with long, narrow, linear entire leaflets, sometimes with here and there a distant gash. Flower rather small, rays nearly entire.

§ 1. *Meduseæ.—*Outer involucrum very long and squarrose, of twenty to twenty-four leaves! the inner eight-leaved. Achenium ciliate, terminated by two very short teeth.*

*Diodonta involucrata. Coreopsis involucrata;* Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 74. Very remarkable for the singular involucrum, which, while all the other parts of the plant are smooth, has its segments strongly ciliated with rigid hairs. I have not seen the mature achenium.

§? II. *Heterodonta.

Bidens, but with the outer, foliaceous involucrum three to four-leaved, the inner about six-leaved, elongated. Rays two or three, very short, not exserted. Stigma smooth, with a small conic point. Achenium linear, flatly compressed, without angles at the sides or summit, hirsute, immarginate. Pappus of two long, diverging, hispid bristles, with the hairs *erect*, not retrorse! radial, abortive fruit, with very short awns.—A dwarf, much branched annual? with opposite, lanceolate-linear, incisely serrated leaves, attenuated at each extremity. Flowers solitary, terminal; scales of the involucrum yellowish. Discal florets shorter than the awns, campanulate with a very slender tube.—(The name in allusion to the erect, instead of reverted bristles of the teeth of the achenium.)

*Diodonta * Bidentoides.*

Hab. The vicinity of Philadelphia? With entirely the aspect of the dwarf variety of *Bidens cernua*, but with the capitulum almost obconic-oblong. Height two or three inches, spreading out five or six inches; leaves attenuated into long petioles, somewhat connate at base.

A second species of this section, or rather genus, occurs in the south-west, and will be described by Mr. Gray.

*COSMIDIUM. (§. Cosmidium of Coreopsis, Gray.)

Coreopsis, but with the discal florets long, tubular and campanulate, deeply five-cleft. Achenium subcylindric, usually tubercular and indurated, with

two wide, acute, concave, foliaceous teeth, retrorsely ciliated on the margin. Paleæ of the receptacle oblong, membranaceous, embracing the fruit.—Perennial, smooth herbs, with capillary, or linear, opposite, pseudopinnated leaves, and few-flowered, dichotomal branched stems; flowers few, long pedunculate, yellow, with a brown disk; the ray in the second species said to be wanting.

*Cosmidium filifolium. Coreopsis filifolia;* HOOKER.

HAB. In Arkansa plains, near the outlet of the Kiamesha, Red River. Flowering in May. Perennial and very smooth, about two feet high, with a rather slender, terete stem. Leaves opposite and fasciculate, petioles connate at base, pseudo-bipinnate, with long, linear, capillary, grooved segments; secondary divisions and uppermost leaves trifid, ultimate pairs simple; branches trichotomal, uppermost dichotomal; the flowers few, upon very long peduncles. Outer and inner calyx each eight-leaved: exterior segments linear-lanceolate, acuminate, a little shorter than the inner, which are lanceolate-oblong. Rays about eight, almost equally three-lobed, sulphur yellow, neuter. Discal florets dark brown, with a slender tube, the upper part campanulate, and cleft nearly to its base, in five linear, reflected segments, the tube of anthers brownish-black, and exserted, with distinct ovate cusps. Stigmas hirsute with golden hair, each terminating in a slender conic point. Achenium subcylindric, pale brown, somewhat curved, tubercular or rough, somewhat carinated internally, indurated into a nut, with a thickish shell, almost as in *Sclerocarpus*, with here and there a few scattered hairs, terminated above in two sublanceolate, concave, large teeth, edged with golden yellow, reflected hairs; the proper seed with its integuments within the indurated envelope. Paleæ wide, oblong and membranaceous, obtuse, with a dark rib in the centre, and embracing the back of the achenium, but not extending over the front.

*Cosmidium gracile;* glaucous; leaves pinnately dissected in five divisions, segments narrow linear, entire; capituli discoid? bractes scarcely one-third the length of the involucrum. *Bidens gracilis;* TORREY, in Ann. Lyceum, New York, Vol. II., p. 215.

HAB. Rocky Mountains. (JAMES.)

## LEPTOSYNE. (DECAND.)

COREOPSIS, but with the rays *styliferous.* Receptacle conic, paleaceous; paleæ oblong, obtuse, flat, three-nerved. Achenium obovate, compressed, somewhat curved, scabrous, with at length a broad, fungous margin and centre, the centre terminated by a minute, entire cup; the radial fruit imperfect, and

nearly smooth. Stigma abrupt, pubescent, terminated by a minute cone. Rays about twelve to fourteen, retuse, and almost equally three-toothed.—A nearly smooth, stemless biennial, with opposite, pseudopinnate, almost capillary leaves; scapes or peduncles one-flowered, very long. Ray and disk yellow.

*Leptosyne Californica.*

Hab. Near St. Diego, Upper California. Flowering in the beginning of May. About a foot high; scapes numerous, terete. Outer involucrum eight-leaved, linear, pubescent at base, as long as the inner, of which the divisions are ovate, and likewise eight. Rays about twelve to fourteen. styliferous, shortly three-lobed, the stigmas filiform, smooth; with an imperfect, flat, and smooth achenium. Receptacle elevated as the fruit becomes mature; paleæ flat, oblong-oval, or ovate, obtuse, membranaceous, deciduous, three-nerved in the centre; the achenium at first rather thin, scabrous, and scattered with short, glandular hairs, at length curved, with a thick, spongy margin, and often a similar, enlarged centre; the seed itself narrow-oblong. Allied to the section *Chrysomelea* of *Coreopsis;* but the peculiar character of the achenium and styliferous rays remove it.

## *TUCKERMANNIA.

Capitulum many-flowered, heterogamous; rays feminine, fifteen to twenty, fertile; discal florets hermaphrodite, tubular, five-toothed. Stigmas exserted, the summit flat, beneath pubescent and obtuse, terminating in a very short cone. Receptacle paleaceous, flat; the paleæ oblong, membranaceous and nerveless. Involucrum double, the exterior shorter, leafy, six to eight-parted, the interior eight to ten-parted. Achenia elliptic, alated, flatly compressed and naked, smooth, without pappus, and, as well as the wing, dark brown.—A succulent, perennial plant of Upper California. Leaves alternate, bipinnatifid, smooth and fleshy; the segments linear and divaricate. Stem one to three-flowered, scapoid, the pedicel very long and naked. Flower large, resembling that of a *Silphium;* disk and ray yellow. Rays three-toothed at the apex, longer than the disk.—(Named in respect to Mr. E. Tuckerman, Jr., who has devoted his attention to the neglected Cryptogamous plants of the United States.)

*Tuckermannia *maritima.*

Hab. On shelving rocks, near the sea, at St. Diego, in Upper California. A very showy and curious plant. Flowering in May. After the period of flowering it remains for a month or two

in a dormant state, shedding its leaves, and appearing like a tuberous or bulbous plant, inert. Cultivated in Philadelphia, it flowered both in the spring and autumn. Leaves nearly all towards the root, lucid and thick; the scape, or peduncle, a foot or more in length, with (generally in a wild state) but a single flower, three or four inches in diameter. Rays about fifteen to twenty, or more, with filiform, smooth stigmas, three-toothed at the apex; chaff of the receptacle composed of oblong, membranaceous, flat and pointed scales. Rays, and several rows of the discal florets, fertile. Discal florets smooth, cylindric, and, as it were, articulated at the commencement of the tube; the teeth acute and flaccid. Stigmas exserted. Achenium dark brown, with the empty or winged margin of the *same* colour.—Remotely allied to *Coreopsis*, particularly the section *Calliopsis*, but with numerous fertile rays, minutely three-toothed, and a conspicuous, receptacular chaff, &c.; also to *Leptosyne*, but with perfect fruit in the ray, a flat receptacle, and a very different achenium, &c.

## ACTINOMERIS. (Nutt.)

Actinomeris *nudicaulis. Helianthus aristatus;* Elliott, Vol. II., p. 428. Decand., Vol. V., p. 591. Leaves opposite, sessile, oblong or oval-lanceolate, scabrous, subserrulate, obtuse; flowers in a trichotomous panicle; calyx short, biserial; rays ten to twelve, lanceolate, entire; awns of the achenium rather short, the winged margin narrow.

Hab. In Georgia.

§ *Achæta.—*Awns of the achenium none; pappus a shallow, elliptic cup.—Leaves opposite, decurrent, corymb few-flowered; rays three or four, with rudimental achenia.

*Actinomeris pauciflora;* (Nutt.) hirsute, leaves elliptic, obtuse, decurrent; peduncle two-flowered, very long.

Hab. East Florida. (Mr. Ware.)

## LEIGHIA. (Cassini.)

*Leighia uniflora;* shortly pubescent, herbaceous; stem mostly one-flowered, terete; leaves below opposite, oblong-lanceolate, acute, sessile and narrowed below, entire, three-nerved, above alternate; flower large, long pedunculate; involucrum hirsute, squarrose, foliaceous at base; paleæ obtuse.—*Helianthus uniflorus;* Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 37.

Hab. Rocky Mountains, towards the sources of the Missouri. Flowering early in June, (9th.) Perennial, stem simple, generally one-flowered. Leaves three to four inches long, and, as well as the stem, hirsute with short, appressed, soft hairs, scabrous on the margin, one or two pairs

opposite, the rest alternate; lower sepals foliaceous, squarrose, the inner linear-lanceolate. Rays fifteen to twenty, twice as long as the disk, two-toothed at the tip, wholly abortive, pale yellow; discal florets cylindric, narrower below, with five erect, blunt, pubescent teeth. Stigmas somewhat ovate, with a short pubescence. Achenium obovate, compressed, ciliated, with two to four subulate, rather wide awns from the angles, and about four minute, intermediate, obtuse squamellæ; the awns scarcely as long as the achenium.

*Leighia * lanceolata;* herbaceous, nearly smooth; stem terete, grooved, about three or more flowered; intermediate leaves opposite, above and below alternate, lanceolate, acuminate at each extremity, entire, petiolate, three-nerved; involucrum foliaceous, subsessile; sepals linear-lanceolate, squamæ retuse; achenium short, obcordate, with two to three slender, persistent awns, twice its length, the intermediate squamellæ minute.

Hab. Rocky Mountain plains and Upper California? Perennial; stem twelve to eighteen inches high, smooth below; lower leaves six to eight inches long, an inch broad, a little pilose. Rays about twelve to fourteen, pubescent beneath, twice as long as the disk, deep yellow. Paleæ retuse, pubescent at the tip. Achenium compressed, alated, smooth, (not ciliated,) short and obcordate, with two or three very long, slender, scabrous, awns from the two compressed angles; squamellæ minute, acute, (in the germ appearing like mere hairs.) Mature seed not seen, in the young state it somewhat resembles that of Actinomeris.

*Leighia? Hookeriana. Helianthus Hookerianus;* Decand., Vol. V., p. 590. *H. longifolius;* Hook. Flor. Bor. Am., Vol. I., p. 313, non. Pursh. Nearly allied to the preceding, but with obtuse leaves, and broad, lanceolate, ciliate sepals. The pappus apparently almost the same.

*Leighia longifolia. Helianthus longifolius;* Pursh, non. Hooker. Intermediate squamellæ of the achenium minute, mixed with a terminal tuft of hairs; the rest of the fruit smooth.†

† To complete the history of this genus I will add the following species, collected in some parts of South America, by the late indefatigable Doctor Baldwin.

*Leighia * Baldwiniana;* herbaceous and scabrous, (apparently decumbent;) leaves crowded, linear-oblong, entire, acute, sessile, three-nerved, the nerves running contiguous to the revolute margin; panicle few-flowered, subcorymbose; sepals linear-lanceolate, acuminate, imbricate and squarrose, somewhat triserial; achenium villous.

Hab. South America: much like *Helianthus angustifolius*. Rays ten to twelve, twice as long as the disk. Stigma pubescent, thick and obtuse. Pappus of two awns, and about six pilose, narrow, indistinct scales.

*Leighia * debilis;* herbaceous and decumbent; stem terete, slender, and scabrous, as well as sparsely pilose, above, to the base of the involucrum, hirsute; leaves sessile, opposite, linear-lanceolate, serrate,

## HELIANTHUS. (Linn.)

*Helianthus lenticularis.* DECAND.

HAB. Banks of the Platte and the waters of the west, generally.

*Helianthus *integrifolius;* ⊙, more or less hirsute with appressed hairs; leaves nearly entire, below opposite, above alternate, ovate, or ovate-lanceolate, three-nerved, petiolate, obtuse or acute; stem few-flowered; sepals lanceolate-oblong, or ovate, acute, closely imbricated; rays about twelve, rather short; achenium villous. *β. gracilis;* leaves denticulate, scarcely three-nerved; sepals acuminate.

HAB. With the above, a small and rather dwarf species, sometimes slender, at other times robust, leaves on long petioles. Stem sometimes almost simple (perhaps a different species;) in others branching from the base. Capitulum pedunculate, about one and a half inches in diameter, or smaller. Rays sometimes styliferous, with abortive fruit, bearing three awns; paleæ of the receptacle ovate, abruptly acute; young achenium almost silky; disk brown. Allied to *H. petiolaris*, particularly β. *gracilis*, but with short peduncles and opposite leaves.

*Helianthus *silphioides;* 4, hirsute and scabrous; leaves petiolate, broad ovate, subcordate, dilated, serrate, acute, below opposite, alternate above; upper part of the stem naked, paniculate, subcorymbose; sepals oval, obtuse, closely imbricate; squamæ of the receptacle acute, somewhat three-toothed; achenium smooth, pubescent at the summit; rays acuminated.

HAB. In the plains of Arkansa, three or four feet high, and robust. Leaves nearly as wide as long, about three inches. Capituli in a branching corymb, branches two and three-flowered. Rays about twelve, acuminated, longer than the *brown* disk. Achenium spotted, subquadrangular, two awned. Discal florets cylindric, rather narrower at base.—Allied to *H. atrorubens*, but a much stouter and broader-leaved plant.

*Helianthus *pumilus;* 4, hirsutely pilose and scabrous; leaves ovate-lanceolate, opposite, attenuated below, subpetiolate, nearly entire, and three-nerved, upper leaves lanceolate, alternate; involucrum hoary, hispid; sepals imbricated, lanceolate, acute, as well as the receptacular paleæ; achenia smooth.

acute, scabrous and somewhat softly pilose; peduncle one-flowered, terminal; sepals in nearly a simple series, oblong, acute.

HAB. Maldonado. (Dr. Baldwin.) Stem slender and wiry, about a foot long, sending off a few one-flowered branches towards the summit. Rays about ten to twelve, rather short. Achenium nearly smooth, with two awns, and numerous smooth squamellæ. Receptacular paleæ linear-lanceolate, acuminate.

Hab. Rocky Mountains and plains of the Platte. A low, perennial, simple stemmed species, about a foot high, leaves two to three inches long, about an inch wide. Capituli about three to five (apparently) sessile. Rays about sixteen, longer than the disk, paleæ somewhat obtuse, hirsute at the summit, scales of the achenium rather large and wide.

*Helianthus *crassifolius;* 2, stem simple, herbaceous, subscabrous; leaves nearly all opposite, lanceolate, acuminate at either end, serrate, above smooth, beneath very scabrous, and, as it were, shagreened; stem naked, one to three-flowered, with a few small, linear leaves; involucrum closely imbricated, the scales ovate, slenderly and finely ciliate; achenium subquadrangular, with sometimes four scales, the two central ones smaller.

Hab. Plains of Arkansa. About two feet high, the lower part of the stem very leafy, above nearly naked from the sudden diminution in the size of the leaves, the plant here and there scattered with drops of resin. Leaves half a foot long, or more, about an inch wide, very thick and coriaceous. Rays about twenty, bidentate. Achenium pubescent above; with small scales from the inner angles; discal florets as usual, enlarged and pubescent towards the base. Allied to *H. pauciflorus*.

*Helianthus *squarrosus;* 2, robust and gigantic; stem scabrous, grooved; leaves lanceolate, or ovate-lanceolate, scabrous at either end, acuminate, sessile, beneath softly villous and somewhat canescent, below opposite and three-nerved, above alternate, margin remotely subserrulate; capitulum upon a long pedicel; calyx squarrose, very widely spreading and coarsely foliaceous; rays numerous, (fifteen to twenty;) palea subtridentate; achenia smooth. *H. tomentosus,* Elliott, non. Michaux.

Hab. In Georgia near Columbus: six to eight feet high: flowers three to four inches across. Rays pale yellow, rather narrow. Disk brownish. Leaves a span long, one and a half to two inches wide. A very showy species, and remarkable for its very leafy calyx, inner leaves linear-lanceolate, the outer sometimes half as large as those on the stem.

*Helianthus *debilis;* 2, stem prostrate, nearly glabrous; leaves alternate, long petiolate, deltoid-ovate, repandly serrulate, glabrous, three-nerved; involucrum closely imbricate; sepals lanceolate acuminate, nearly equal, and almost smooth; capitulum long pedunculate, solitary, terminal; achenium smooth; disk dark brown.

Hab. The sea-coast of East Florida. (Dr. Baldwin.) In the Herbarium of the Academy of Nat. Sci. Philad. as *H. prostratus*, by Schweinitz, but very distinct from that species, having also the two deciduous pappus scales of the genus without any intermediate squamellæ, therefore not a *Vigueria.* Several spreading, prostrate stems, probably from the same root. Stem brown, terete, about a foot long, petiole more than an inch longer than the leaf, which is acute. Rays ten to twelve.

*Helianthus Missouriensis;* (SCHWEINITZ, MSS.,) extremely scabrous; leaves atenuate, radical spathulate, serrate, cauline oblong obtuse, uppermost linear, acute; stem dichotomous, the branches diverging, one-flowered; sepals ovate, minutely ciliate, closely imbricate; stigma lanceolate, hirsute, golden yellow.

**HAB. Plains of Missouri. Closely allied to *H. pauciflorus*.**

## Division IV.—BIDENTIDEÆ. (*Lessing. Decand.*)

## BIDENS. (Linn.)

BIDENS *quadriaristata. β. * dentata;* leaves remotely dentate, serrate, outer involucrum about five-leaved, longer than the oval rays.

**HAB. Wappatoo Island, at the outlet of the Wahlamet, Oregon.**

*Bidens Californica.*

HAB. St. Diego and St. Barbara, Upper California; common, ⊙. Also in Chili. Rays nearly white, inclining to yellow, often wanting.

§. CAMPYLOTHECA.—(Genus CAMPYLOTHECA, Cass. Decand.) *Achenium linear, sometimes curved or contorted, linear and compressed; awns two, small, or wanting.*

*Bidens * mutica;* very smooth and herbaceous; leaves ternately or pinnately divided; leaflets ovate-lanceolate, acuminate, serrate; panicle trichotomous; exterior involucrum a little shorter than the inner; rays about five, twice as long as the disk; achenium straight, sparingly pilose, without awns.

HAB. Ouau, Sandwich Islands. Less than a foot high, the lower leaves quinate, the uppermost nearly simple. Flowers yellow, rather small; the inner and outer involucrum each about five-leaved. Disk dark brown; tube of the florets nearly the length of the border. Branches of the stigma terminated by short conic appendages. The achenium smooth, or with a few scattered hairs, transversely striated, sometimes with a single awn, but mostly without any; branchlets of the panicle about three-flowered, the capituli on long pedicels.

*Bidens * gracilis;* smooth and herbaceous; leaves ternately or pinnately divided, leaflets lanceolate, acuminate, serrate; panicle slender, trichotomous; exterior involucrum a little shorter than the inner; rays about five, scarcely longer than the disk; achenium somewhat curved, with two short awns, having a few retrorse bristles towards the extremity.

Hab. With the above, which it closely resembles, but is a more slender plant, with smaller flowers; terminal leaflet largest, the lateral often small. Achenia a little bristly, sometimes with only one awn, or even without any, in the same capitulum with most of the others possessing awns.

*Bidens* **angustifolia;* very smooth and herbaceous; leaves pseudopinnate, in two or three pairs; segments narrow-lanceolate, acuminate, serrate, the lowest leaflet sometimes divided; panicle trichotomous, contracted; sepals nearly equal; rays about five, longer than the disk; achenium ciliate with erect bristles, two-awned, the awns retrorse at the summit.

Hab. With the above, from which it differs in the narrow and pinnated leaves; the fruit has, also, longer awns, and the pedicels are short. The stem twelve to eighteen inches high. Awns of the achenium sometimes unequal, or of different lengths in the same capitulum.

### † Bidens proper.

*Bidens* **hirsuta;* herbaceous, and more or less hirsutely pubescent; stem quadrangular, grooved, trichotomous; leaves pseudopinnate, in two or three pairs, the uppermost sometimes ternate, segments lanceolate, acuminate, incisely serrate, lateral divisions with the base obliquely attenuated; rays none; involucellum eight-parted, shorter than the involucrum; achenium subquadrangular, with a wide, circular, basal areole, the angles hirsute or scabrous above; awns three, unequal, strongly retrorse barbellate.

Hab. In Atooi. Two to three feet high, with a thick, hirsute, quadrangular stem, oppositely branched. Leaves much like those of *Agrimonia Eupatoria;* hence, I suspect it is closely allied to *B. Wallichii.* It is, however, destitute of rays. Outer involucrum with the segments connected together at the base; the inner, also, about eight-leaved. Achenium linear, straight, smooth, except the upper edges of the angles, which are ciliate with tubercular, short bristles; awns about three, a third the length of the fruit, with strong, barbellate bristles their whole length. Hairs of the stem broad, flat, membranaceous and acuminate. Branches of the stigma with long, acuminated, slender points.

## *MICRODONTA.

Capitulum many-flowered, heterogamous; rays feminine in a single series, (about five,) many-nerved. Discal florets hermaphrodite, tubular-campanulate, five-toothed, the tube short and slender. Receptacle flat, paleaceous; palea oblong, similar with the inner involucrum. Involucrum double, the outer six-leaved, foliaceous, the inner about five-leaved, discoloured, somewhat scarious. Achenia flatly compressed, those of the ray elliptic, mi-

nutely bidentate, those of the disk oblong, with two short teeth, and a minute intermediate, paleaceous crown; one or two central florets, with two minutely retrorse bristly awns as long as the floret. Branches of the style terminated by a small abrupt cone.—A dwarf annual of Peru. Stem apparently simple; leaves ternate and opposite, trifid or three-lobed, ciliate. Flowers terminal, yellow.

*Microdonta *nana;* ⊙.

Hab. Near Arequipa, Peru. (Mr. Curson.) The whole plant about two inches high. Stem simple, pilose above, terminating in a single flower. Leaves petiolate, the petiole and a line down the stem ciliate and pilose; the simple leaves oval, three to five-toothed, segments of the trifid leaves narrower, also three-toothed. Segments of the outer involucrum linear-oblong, distinct to the base, longer than the inner, hirsute. Inner involucrum, like that of Bidens, the segments nearly smooth, oblong-oval, many-nerved like the rays. Rays five, oblong, truncate, shortly three-toothed, about twice the length of the inner involucrum, many-nerved, with a rather long narrow tube, stigmas slender, not thickened at the extremity as in the discal florets, and nearly smooth. Discal florets, as well as the rays, yellow, subcampanulate above, the tube contracted rather more than a third the length of the upper part of the floret. Palea flat, very similar to the inner involucrum, and equally wide. The achenium of the ray largest and most perfect, elliptic, truncate, minutely bidentate, naked; those of the disk narrower, but not rostrate, with short, smooth teeth, and a row of minute, intermediate, slender, chaffy scales; one or rarely two, of the central florets producing the usual two awns of a Bidens, but scarcely as long as the achenium, and minutely barbellated with retrorse bristles. I have described from two specimens. The flower, rather large for the diminutive size of the plant. A remarkably distinct genus in the Bidentideæ, the rays being more perfect than the discal florets, and without awns; the attenuation of the discal fruit above, without being properly rostrate, would seem to ally our plant to *Cosmos*, from which, however, it is wholly distinct.

## Division V.—Verbesineæ. (Lessing.)

### § 1. *Leaves not decurrent.*

Verbesina **villosa;* herbaceous, stem terete, pubescent, leaves alternate, lanceolate, sessile, at both ends acuminate, entire or repandly denticulate, above scabrous, beneath softly villous; corymb compound; rays about three, (white;) sepals softly pubescent, linear, acuminate; achenium subpubescent, without winged margin.

Hab. Plains of Arkansa. Resembles *V. virginica*, though perfectly distinct, and much nearer to *V. acuminata*. A stout, tall plant; leaves half a foot long, two inches wide, cuneately narrowed below, upper part of the stem and peduncles densely villous; flowers clustered; achenium cuneate, without any sensible wing, the two awns slender and somewhat pilose.

## Subtribe IV.—Tagetineæ.

### *RIDDELLIA.

Capitulum many-flowered, heterogamous; rays feminine, three to five, coriaceous, persistent, dilated, equally and obtusely three-lobed, six-nerved; discal florets hermaphrodite, tubular, five-toothed, the dentures glandular. Stigmas subcapitate, obtuse, minutely pubescent. Involucrum cylindric, composed of eight ingrafted leaflets. Achenium slender and conic, prismatic, smooth. Pappus paleaceous, five or six-leaved, segments lanceolate, acuminate, nerveless, similar in the ray. Receptacle naked, minute.—A slenderly branching, aromatic herb, with alternate, oblong-linear, subtomentose leaves; branchlets corymbose, three to five-flowered; persistent rays apparently yellow, (reddish-orange after inflorescence;) involucrum densely sericeous with long hairs.—(Named in respect of Professor Riddell, a botanist, who has explored the interior of Texas.)

*Riddellia * Tagetinæ.*

Hab. The southern range of the Rocky Mountains, towards the sources of the Platte. A very elegant plant, with the habit of a Zinnia, but having the involucrum formed of a single series of united sepals. The rays are very remarkable, appearing as rigid as parchment, and remain perfectly flat after inflorescence, as in Zinnia.

### *SOLENOTHECA.

Capitulum few-flowered, heterogamous; rays feminine, very few and small, (two or three.) Involucrum an entire, even, cylindric tube, with a short, five-toothed border. Receptacle naked. Achenium fusiform, compressed, somewhat four-sided, partly stipitated at the base, pubescent. Pappus paleaceous, paleæ elongated, setiform, of equal length, but unequal thickness, ciliated, and almost plumose on the margin.—A small annual of Peru, with slender, spreading branches; leaves opposite and alternate, pinnatifid. Flowers terminal, fastigiate; liguli few and very small. Nearly allied to Tagetes, but with a very different pappus, and a peculiar habit.—(Named from σωλην, *a tube*, and θηκη, *a sheath*, in allusion to the cylindric calyx.)

*Solenotheca * tenella.*

Hab. Near Arequipa, in Peru. (Mr. Curson.) Annual, with a simple, slender root. The whole plant three to four inches high; very smooth. Leaves below opposite, above alternate, deeply pinnatifid; segments two or three pairs, linear, serrate, or merely three-toothed at the summit, less than half a line wide; branches terminating in one or two flowers; capituli pedicellate. Involucrum smooth and cylindric, about half an inch long, a line wide, and a little ventricose towards the base, five-toothed, the teeth shallow. Rays two or three, scarcely exserted, the border somewhat round, greenish-yellow. Tubular florets about five, five-toothed, the dentures connivent. Stigmas ending in a slender, pubescent cone. Pappus longer than the long and slender achenium, very shining, somewhat yellow, achenium subsericeous.

## Subtribe V.—HELENIEÆ. (Cassini.)

### Division I.—Gaillardieæ.

Gaillardia *pulchella;* (Decand.)

Hab. Arkansa plains; common.

*Gaillardia aristata;* (Pursh.)

Hab. Arkansa Plains.

Baldwinia *uniflora;* (Nutt.) Stem sometimes three-flowered.

## LEPTOPODA. (Nutt.)

Leptopoda **pinnatifida;* (Herb. Schw.,) radical and lower leaves incisely pinnatifid, with remote segments, cauline sessile, narrow-linear, subulate, smooth; stem fistulous, pubescent, one-flowered; sepals nearly in a single series, very short; rays about twenty, linear; achenium pubescent, paleæ of the pappus obtuse and awnless.

Hab. East Florida. (Dr. Baldwin.) About a foot or eighteen inches high, somewhat slender, with very narrow and rather numerous leaves; upper part of the stem naked; flower small; rays about half a line wide, terminating in three small teeth.

*Leptopoda Helenium;* smooth; leaves entire; radical, oblong-lanceolate, denticulate, lower stem leaves lanceolate-linear, attenuated into long petioles, middle stem leaves only decurrent; naked portion of the stem long; stem one to three-flowered, the apex, before flowering, tomentose; involucrum shorter than the disk; achenium smooth, the pappus slightly lacerate.

Hab. West Florida. Sepals short, lanceolate and unequal; rays more than twenty, wedge-shaped, trifid at the summit, sometimes very wide.

*Leptopoda *denticulata;* smooth; leaves linear-sublanceolate, denticulate, acute, attenuated at the base, cauline broadly decurrent, uppermost sessile, acuminate; sepals as long as the disk, lanceolate-linear; achenium smooth, pappus deeply lacerate.

Hab. In Georgia. *L. Helenium;* Decand., Vol. V., p. 653. Leaves almost all equally narrow. Flower larger than the preceding. Rays more than twenty, broad cuneate, trifid and quadrifid. The peduncle conically enlarged under the capitulum.

*Leptopoda *brevifolia;* smooth; radical leaves spathulate, subsessile, cauline spathulate, denticulate, obtuse, slightly decurrent, uppermost lanceolate, entire, acute; stem smooth, one-flowered; achenium pilose, turbinate; pappus slightly lacerated.

Hab. In South Carolina. A remarkable species, clothed distantly with leaves nearly to the summit; radical ones very short, about an inch, nearly sessile, cauline leaves about two inches long, half an inch wide. Flower large and showy, the rays few, (about twelve,) and much dilated. Sepals lanceolate, shorter than the disk. Discal florets dark brown. Achenium covered with brown, chaffy hairs.

## BAHIA. (Decand.) Trichophyllum. (Nutt.)

*Bahia integrifolia;* (Decand.)

Hab. Oregon and the Blue Mountains. Pappus about ten-leaved, nearly equal.

*Bahia multiflora. Trichophyllum multiflorum;* Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 35.

*Bahia lanata;* herbaceous and erect; lower leaves often bipinnatifid, segments linear, equal, beneath and the stem canescently tomentose, above greenish; flowers loosely corymbose, peduncles of moderate length. *Trichophyllum lanatum;* Nutt. Gen. Am., l. c.

Hab. With the above, of which it may be, perhaps, only a variety. The stem and leaves are more slender, and the latter not so tomentose above; the peduncles are also fastigiate, and form a loose corymb; in the preceding the peduncles are very long and few. Pappus unequal. The specimens described by Hooker, according to one sent from the author to Schweinitz, are weak ones, in which the bipinnatifid leaves are not developed.

*Bahia tenuifolia;* (Decand.) Very nearly allied to *B. lanata.* Perhaps only a variety, with narrower leaves and shorter pedicels.

Hab. Common on the banks of the Oregon, in rocky places.

### † *Shrubby species, with alternate leaves.*

*Bahia confertiflora;* (DECAND.)

HAB. St. Barbara, Upper California. A low, branching shrub, about a foot high, with the stem, involucrum, and leaves beneath whitely tomentose. Leaves somewhat ternately pinnatifid, amplexicaule at base, about one to one and a half inches long, the segments about a line wide. Flowers at length loosely pedicellate, at first, when in flower, in sessile clusters. Primary leaves sometimes simply trifid, divisions usually about two long lateral ones, with the terminal ones short. Flowering in April.

*Bahia *trifida;* leaves small, cuneate, amplexicaule, trifid at the summit; corymb contracted, many-flowered; pappus eight-leaved, alternately narrower and longer; stem and under side of the leaves whitely tomentose.

HAB. With the preceding, which it nearly resembles, but the leaves are smaller and rather crowded. Rays and sepals five to seven; stem densely, and, at the summit, often arachnoidly tomentose.

*Bahia stæchadifolia;* (DECAND.) OBS. Radical leaves sparingly pinnatifid, upper leaves linear, entire, obtuse.

HAB. With the preceding. A very low shrub, leaves linear, crowded below, two inches long, about a line wide, whitely tomentose beneath; corymb contracted. Perfect flower not seen. Pappus eight-leaved, the four at the angles of the fruit narrower and longer. Receptacle deeply alveolate.

*Bahia artemisiæfolia;* (LESS.)

HAB. St. Francisco, Upper California.

## HYMENOPAPPUS. (L'Heritier.)

*Hymenopappus tenuifolius.*

HAB. Plains of Red River and Missouri.

*Hymenopappus filifolius.*

HAB. Plains of the Oregon. In my specimens the pappus is rather conspicuous.

*Hymenopappus *luteus;* canescently tomentose; stem slender and dwarf; leaves bipinnatifid, ultimate segments or lobes very short, linear, obtuse; sepals rounded, about twelve; florets yellow; panicle few-flowered, subcorymbose; pedicels moderate; achenium densely lanuginous; pappus short.

HAB. Rocky Mountains, towards the Colorado of the West, particularly on Ham's Fork. Usually less than a foot high. Leaves short, with crowded segments. resembling Milfoil; for the most part whitely tomentose, sometimes nearly green. Root-stock thick, almost woody, very woolly between the leaves. Stem about a span, slender, three to five-flowered, somewhat dichotomal; capituli fastigiate, florets yellow, the border narrower and less deeply cleft than usual. Stigmas

pubescent, with a thick, obtuse extremity, ending in a minute cone. Achenium short and striate, covered loosely with long, soft hairs; pappus scales white, lacerated, obtuse, about twenty, scarcely exserted beyond the down.—Nearly allied to Chænactis, but with the florets all regular.

## CHÆNACTIS. (Decand.)

Capitulum many-flowered, homogamous; florets tubular, funnelform, the external series with the border dilated, ringent or palmate, five-cleft or five-toothed, with the tube smooth and the dentures pubescent. Involucrum campanulate, composed of two series of erect, linear sepals, (twenty to thirty,) not membranaceous (or scarcely so) on the margin. Receptacle naked, alveolate, the margin sometimes paleaceous, the paleæ similar with the involucrum. Branches of the style hirsute, subulate, (without the conic apex.) Achenia linear-tetragonal, attenuated almost into a pedicel at the base, pubescent with appressed hairs. Pappus of four or five? lanceolate, acute. membranaceous paleæ, in the ray shorter and obtuse.—Californian annuals, with the habit of Hymenopappus. Leaves alternate, pinnately divided, with narrow, entire, linear lobes; branches often naked at the summit, monocephalous. **Flowers yellow. Anthers naked at base.**

*Chænactis * tenuifolia;* annual or biennial; at length smooth, much branched, flowers fastigiate; leaves bipinnately dissected, segments narrow-linear, or linear-oblong; rays funnel-formed, expanding longer than the disk; achenium nearly smooth; pappus four-leaved; sepals pubescent, linear, acute; margin of the receptacle paleaceous.

Hab. St. Diego, Upper California. Flowering in May. About a foot high. Leaves very similar to those of *Hymenopappus filifolius*, alternate, the young shoots a little tomentose. Involucrum hemispherical, many-flowered, somewhat viscid; pedicels rather short. Style hirsute, subulate. Florets minutely pubescent; the flowers bright yellow. Stem about a foot high. Pappus of the rays shorter and obtuse.—Nearly allied to *C. glabriuscula*, but the rays are not palmatifid. In this species the margin of the receptacle is foliaceous, the radial florets being situated between the outer and inner series of the sepals.

*Chænactis Stevioides;* (Hooker and Arnott.)

Hab. In the Snake country. The rays palmatifid. Pappus four-leaved. Achenium four-angled, nearly smooth.—A slender, few-flowered annual. Sepals oblong-lanceolate, nearly smooth, about fifteen. Very nearly allied to the preceding. Flowers yellow?

## *MACROCARPHUS.

HYMENOPAPPUS, but with the leaves of the involucrum linear, numerous, (fifteen to twenty,) equal, in nearly a single series, and almost without membranaceous margins. Receptacle naked. Florets tubular, the shortly five-cleft border pubescent; the outer series somewhat ringent, but not spreading. Branches of the style hirsute, filiform, thicker towards the extremity. Achenium linear, conic, subcylindric, villous, attenuated below; with a chaffy, nerveless pappus of about ten to twelve unequal, lacerated, oblong, obtuse leaflets more than half its length; the pappus of the outer florets shorter.—Biennial herbs of the north-west coast of America, and the Rocky Mountains, with tomentose, bipinnatifid, alternate leaves. Stems dichotomous, corymbose. Capitulum many-flowered, the florets rosaceous, or nearly white, with the tube of anthers exserted, their cusps linear and acute, the base naked.—Intermediate between Chænactis and Hymenopappus; differing from the former in its nearly equal florets, filiform, and not subulate stigma, nearly terete achenium, and a pappus of many long, obtuse leaflets; from the latter in the narrow-leaved involucrum, long leaves of the pappus, and the form of the florets, which are merely tubular, not campanulate.—**(Named in allusion to the great length of the pappus.)**

*Macrocarphus Achilleæfolius;* canescently tomentose; branches corymbose, leaves bipinnatifid, lobes short, oblong-obtuse; sepals canescently tomentose, about twenty; chaff of the pappus nearly the length of the elongated, villous achenium. *Chænactis Achilleæfolia;* HOOK. and ARN. Bot. Beech., l. c.

HAB. In the Rocky Mountain range, on Ham's Fork of the Colorado; common. Flowering in July and August. Capitulum large, the florets pale rose-red. Robust, biennial, about four to six **inches high; the leaflets and lobes crowded, as in Milfoil.**

*Macrocarphus Douglasii;* deciduously and slenderly tomentose; stem branching, corymbose; leaves pinnatifid, lobes entire or subdivided, oblong, obtuse; sepals glandularly and minutely pubescent; radial achenium glandularly scabrous, slightly pubescent, with a nearly equal pappus about half its length.

*Hymenopappus Douglasii*, Hook., Vol. I., p. 316. Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 30.

Hab. In the Rocky Mountains, towards the sources of the Missouri and the Platte. Allied to the preceding, but a much smoother and more slender plant, and with a different pappus and achenium. The florets, like those of the preceding, are pale rose-coloured. Radial florets with a shorter pappus, and a scabrous, slightly hairy achenium; the central fruit villous.

Polypteris. Obs. Involucrum biserial, equal, subcampanulate. Sepals greenish-white, oval, obtuse, with broad, membranaceous margins, (as in *Hymenopappus;*) tube of the floret filiform, as long, or longer than the campanulate, deeply five-cleft border, the segments of which are smooth, linear and revolute, (and appear to have been white, or ochroleucous.) Stigmas filiform, equal, hirsute, much exserted. Achenium angular, acute below, black, slightly scabrous; pappus of ten to twelve lanceolate, brownish, membranaceous leaves, with a strong mid-rib carried out to a terminal, shortly awned point, the rib externally hirsute. Flowers disposed in corymbose, pedunculated clusters.

## *STYLESIA.

Capitulum heterogamous, many-flowered; rays in a single series, (six to eight,) oblong, entire, feminine; discal florets hermaphrodite, the border five-cleft, campanulate, the tube glandularly pilose. Stigmas obtuse, pubescent, revolute, short, terminated with a minute cone. Involucrum turbinate-campanulate; sepals eight, in a single series, ovate, obtuse, membranaceous on the margin, distinct at the base. Receptacle small, naked. Achenium linear-turbinate, narrowed below; when mature, flatly four-sided. Pappus a small chaffy crown, of about eight obtuse, somewhat lacerated, nerveless scales.—Suffruticose plants of Chili, with opposite, multifid leaves, and corymbose, pedunculated flowers, with the rays white and the disk yellow. Allied apparently to *Hymenoxys*, but with a very different habit to *Bahia*.—(Named in honour of Doctor Styles, who made a very interesting collection of Chilian plants, now mostly in the Herbarium of the Academy of Natural Sciences in Philadelphia.)

*Stylesia Ambrosioides;* upper part of the stem and involucrum villous and glandular; leaves ternately bipinnatifid, petiolate, segments oblong, obtuse;

flowers corymbose; sepals oblong or lanceolate, longer than the disk; achenium linear, elongated, pilose, more than twice as long as the pappus.—*Bahia Ambrosioides;* (Lagasca.)

Hab. Chili. (Dr. Styles.) A small under shrub, more or less gray and puberulous; leaves opposite, trifid, or twice trifid, the segments oblong and incise; flowers corymbose, with the rays longer than the disk. The discal florets and involucrum almost that of *Hymenopappus*, to which it is intimately related. Flowers by threes, six to nine in a corymb.

*Stylesia *puberula;* minutely pubescent; leaves ternately bipinnatifid, petiolate, segments oblong or cuneate-oblong, somewhat obtuse; flowers corymbose; sepals ovate, glandularly pubescent; achenium obconic, scarcely longer than the pappus.

Hab. Chili. (Dr. Styles.) Nearly allied to the preceding. A shrub, with rather stout branches, the stems very full of leaves in the axills. Flowers corymbose, probably white? Rays five or six. The involucrum nearly hemispherical. Pappus brown, shorter than in the preceding; the achenium, also, not more than half the length of that species. Leaves in three principal divisions, the lowest segment pinnatifid, the upper and terminal merely bifid or trifid.

## ACTINELLA. (Persoon.)

Capitulum heterogamous, many-flowered; rays feminine, cuneate, three-toothed. Involucrum hemispherical or subcampanulate, biserial, shorter than the florets; sepals nearly equal. Receptacle naked, convex or conic; discal florets short and tubular, five-toothed, villous at the summit; anthers included. Stigmas revolute, obtuse, externally hispid, inappendiculate, in the ray filiform and smooth. Achenium turbinate, subcylindric, striate, densely pilose. Pappus of about five to twelve membranaceous, aristate paleæ, eroded on their margins.—Herbaceous or suffruticose plants of North and South America. Stemless or branching; leaves entire, incise, or pinnatifid; flowers pedicellate, solitary, mostly yellow.

† *Stem herbaceous, leafless, scapoid; the leaves radical, and mostly entire.*

*Actinella acaulis;* Nutt. Gen. Am., Vol. II., p. 173. *Galardia acaulis;* Pursh, Vol. II., p. 743. *Cephalophora acaulis;* Decand., Vol V., p. 663. Leaves softly and sericeously villous, canescent, in cæspitose tufts. Root long, thick and fusiform; scapes sometimes, though very rarely, with a single leaf. Rays ten to twelve. Receptacle convex.

Hab. Hills towards the sources of the Platte, in chalky soil.

*Actinella scaposa.* *β. *linearis;* slenderly villous; leaves narrow-linear, sublanceolate, much attenuated below, all entire, with dark punctures; scape very long and slender, with one capitulum; sepals linear-oblong, obtuse, twenty or more in two series.

Hab. Texas. (Professor Riddell.) Rays about twelve, twice as long as the disk; pappus five-leaved, white and thinly membranaceous, nerveless, oblong, abruptly apiculate; achenium slenderly villous. Receptacle convex. Probably a distinct species, as the leaves are never apparently pinnatifid, as in the true *A. scaposa.*

*Actinella *glabra;* leaves narrow-linear, sublanceolate, attenuated below, broadly sheathing and ciliate at base, covered with dark, impressed punctures; scape one-leaved, one-flowered; involucrum campanulate, biserial, lanuginous, sepals about twelve, ovate, obtuse; receptacle conic.

Hab. Missouri, (near the Shawnee villages.) I have only seen a single specimen, after flowering. It appears to be much allied to the preceding species, but with a different involucrum and receptacle. Root perennial, with persistent vestiges of leaves, growing probably in tufts. Scape with a slender linear leaf about half way up to the flower.

*Actinella *Torreyana;* densely cæspitose; leaves linear, punctate, sparsely pilose, but green, and darkly punctate, with a callous, rather obtuse point; axills, scape and involucrum very loosely lanuginous; sepals oblong-ovate, obtuse, with membranaceous margins; pappus five-leaved, hyaline, and slenderly apiculate; receptacle conic. *Actinea integrifolia;* Torrey, in Annals Lyceum Hist. Nat. N. York., Vol. II., p. 213, non Kunth.

Hab. On the lofty hills or mountains, called the "Three Butes" of the upper Platte, on shelving rocks. Flowering in June. An alpine species of very dwarf stature, two to three inches high. Rays ten or twelve deeply three-toothed, strongly veined, rather wide and large.

*Actinella *lanata;* densely cæspitose; leaves linear, subacute, softly and copiously pilose, as well as the axills; scape and involucrum nearly impunctate; the primary leaves oblong-spathulate, coriaceous; outer sepals lanceolate, or lanceolate-ovate, without membranaceous margins; pappus five-leaved, scales lanceolate, with long and distinct awns; receptacle conic.

Hab. With the above, which it very closely resembles, but is much more pubescent, with longer awns to the pappus and a different involucrum.

†† *Caulescent; leaves pinnatifid, filiform.*

*Actinella Richardsoni;* caulescent, nearly smooth; leaves alternate, petiolate, pinnatifid; segments few, filiform-linear, rigid, punctate; branches mostly one-

flowered; sepals ovate, the outer series coalescent at the base; pappus about five to seven-leaved, aristate; receptacle conic.

Hab. Upper Canada, Carlton-House, on the Sascatchewan. A strict congener with the preceding, of which several species have also the pellucid bitter resinous glands on the corolla. *Picradenia, Richardsoni,* Hooker, Flor. Bor. Am., p. 317, t. 108.

Obs. *Actinella heterophylla,* the type of the present genus, which we can by no means join with *Cephalophora,* is a suffruticose, somewhat minutely hirsute, much branched, apparently decumbent plant; the leaves linear, alternate, rather crowded, some of them irregularly and incisely lobed, the lobes seldom more than a single pair; they are also covered with impressed, globular glands, which communicate to the plant, as in Picradenia, an intense bitter taste; the branches terminate each in a single, long, pedicellated capitulum; the involucrum is very short, consisting of a double series of tomentose, narrow sepals, the outer lanceolate. Receptacle convex. Achenium turbinate, subcylindric, covered with dense and shining brown hair. The pappus a crown of ten to twelve narrow-lanceolate, membranaceous scales, each with a strong, brown, central nerve going out into a long, slender awn. Rays numerous, cuneate, three-toothed, apparently ochroleucous, or white, externally brownish, as in the flowers of *Gaillardia.* A branch of this plant almost wholly resembles a specimen of the *A. scaposa;* the genus differs from our plants only in the greater number of its pappus scales, which, in *Picradenia,* are, however, five to seven.

## BURRIELIA. (Decand.)

*Burrielia gracilis;* ⊙, above minutely hirsute; below smooth; stem often branching from the base; flowers fastigiate; leaves long and linear; rays and sepals ten to fourteen, the rays longer than the disk; achenium minutely scabrous.

Hab. Near St. Barbara, Upper California. Six inches high, branched both below and above. Pappus scales four, lanceolate, with long awns; achenium of the ray flattened, with two aristate pappus scales. Receptacle conic.

*Burrielia *longifolia;* ⊙, leaves long, linear, and very narrow, smooth; stem branching from the base, few-flowered; sepals and rays ten to fourteen, the latter oval, shorter than the disk; achenium nearly smooth.

Hab. With the preceding, to which it is closely allied. Leaves scarcely half a line wide, two inches long; rays much shorter than in the preceding. Pappus four-leaved, awned, that of the

ray two. Four to six inches high, nearly smooth, except the young shoots and involucrum. Receptaculum conic.

*Burrielia *parviflora;* somewhat pubescent; very much branched and many-flowered; leaves long and almost filiform; rays and sepals about eight; rays oblong, very short; achenium minutely scabrous.

Hab. With the above. Leaves scarcely a quarter of a line wide. Stem much branched from the base; peduncles slender and very long. Involucrum smooth, divisions lanceolate. Receptacle conic. Pappus three or four-leaved, long-awned, in the ray two-leaved and similar. Obs. In all these species the discal florets are campanulate with a narrow tube, the border with five acute erect teeth, scarcely, if at all, pubescent.

### §. 1. *Amphiachænia.—*Pappus none.*

*Burrielia *hirsuta;* erect, hirsute; leaves very long, linear and acute, sometimes here and there incise; peduncles elongated; sepals and rays ten to twelve; rays oval, as long as the disk.

Hab. St. Barbara, Upper California. Achenia compressed and scabrous. Six to twelve inches high, below smooth, with the radical leaves very narrow. Stem leaves, about two inches long, and a line wide. Scarcely distinguishable from *B. gracilis*, except by the absence of pappus.

## *PTILOMERIS.

Capitulum heterogamous, many-flowered; rays feminine, elongated, slightly three-toothed. Involucrum subcampanulate, many-leaved, in nearly a simple series, (ten to fifteen.) Sepals lanceolate, embracing the radial achenia. Receptacle conic, naked or villous. Achenium slenderly conic, angular, hirsute, attenuated at base. Pappus extremely various, many-leaved, paleaceous, (eight to twelve,) or none! apex awned or obtuse, fimbriate; in the ray smaller, formed simply of a short, multifid crown, or with the addition of one or two awns. Discal florets hermaphrodite, campanulate, five-toothed, externally, as well as the tube, glandularly pubescent. Stigma obtuse, short, reflected, and pubescent.—Annual herbs of California; much branched; leaves opposite, once or twice pinnatifid with long, capillary segments; flowers terminal, pedicellate, golden yellow. The whole plant clothed with a slender, soft, glandular pubescence, which is aromatic. Al-

lied to *Burrielia* in habit, but with the pappus in a numerous series, and the leaves plumosely torn; also to *Lasthenia*, but with conspicuous, regular rays, and an involucrum of separate sepals. It likewise approaches the MADIEÆ, by the embracing sepals, but the marginal achenia are provided with pappus. The most paradoxical character the plants of this genus present, however, is in the absolute conformity, or nearly so, of all the species with each other, while they differ in the receptacle and in the pappus, or by its total absence!—(Named in allusion to the slender feather-like foliage.)

*Ptilomeris *aristata;* paleæ of the pappus eight to twelve, awned; the ray with two awns and a small crown of minute leaflets; receptacle conic, naked, and alveolate.

HAB. Near St. Diego, Upper California. Flowering in April. Every part of the plant minutely and glandularly pubescent; branching from the base, sometimes, in weak specimens only towards the summit, branches few-flowered, flowers fastigiate. Leaves opposite, once or twice deeply pinnatifid, the rachis alated and rather broad towards the base, segments almost capillary, long and acute, (often an inch or more) and as fine as in Fennel. Involucrum ten to fifteen leaved, rays the same number; sepals lanceolate, acute, equal, foliaceous; rays as long as the disk, oblong, slightly two or three-toothed, the middle tooth smaller. Flowers bright yellow, a little smaller than those of the common wild daisy. This, and the rest, from their abundant bright flowers, are very ornamental, and of easy cultivation. In a green-house, in Philadelphia, I had this and the following species to grow and flower luxuriantly, but they have since been lost through neglect.

*Ptilomeris *coronaria;* palea of the pappus eight to twelve-awned; the ray generally without awns, and with a small crown of diminutive, awnless leaflets; receptacle conic, densely villous and alveolate.

HAB. With the preceding, from which it can only be distinguished by the specific characters.

*Ptilomeris *mutica;* paleæ of the pappus six to eight-leaved, obtuse and fimbriate at the summit, that in the radial florets smaller; receptacle conic, sparsely pilose.

HAB. With the preceding, from which it can only be distinguished by the pappus. The rays, as in the whole genus, are embraced by the sepals.

### §. 1. *PTILOPSIS.—*Pappus none.*

*Ptilomeris *Anthemoides;* pappus none; epigynous disk very minute.

HAB. With the above, and in no way, apparently, distinguishable from the preceding but by the achenium. If any thing, the involucrum in this is a little more campanulate.

## *DICHÆTA.

Capitulum many-flowered, heterogamous; rays feminine, oblong, two-toothed. Discal florets hermaphrodite, five-toothed, with a campanulate summit, smooth. Stigmas subcapitate, obtuse, pubescent. Involucrum subcampanulate, five to twelve-leaved, in a single series; sepals ovate, ciliate, the same number with the rays. Receptacle conic, narrow and elevated, papillose. Achenium narrow and acutely conic, angular. Pappus in ray and disk similar, of about eight obtuse, small, fimbriated scales, and two, rarely three or four, intermediate, separate awns.—Annuals, with opposite, entire, or laciniately pinnatifid leaves; flowers terminal, pedicellate, yellow, almost exactly like those of *Burrielia*, but the plant subaquatic, and with a very different pappus.—(The name from the intermediate pappus of mostly two awns.)

*Dichæta *tenella;* erect, stem simple, pilose; leaves linear, mostly entire, the lower ones somewhat laciniated; rays and sepals five to eight.

Hab. On the margins of ponds and wet places. St. Barbara, Upper California. Flowering in April. A slender, diminutive plant three or four inches high. Leaves an inch or more long, about a line wide. **Rays scarcely as long as the disk.**

*Dichæta *uliginosa;* decumbent and branching; stem, peduncles, and often the involucrum hairy; leaves laciniately pinnatifid, with a broad rachis, the segments linear; rays about eight to twelve, shorter than the disk.

Hab. With the above, but a much larger plant, and almost aquatic. Awns of the pappus sometimes three or four. **Leaves two to three inches long with a broad rachis, sending off very unequal, linear, narrow, acute segments.**

## LASTHENIA. (Cassini.)

§. Hologymne.—Rays oblong, conspicuous, as long as the disk. Achenia compressed, linear-oblong, glandularly scabrous, and without pappus.—Annual, subaquatic, or terrestrial herbs, with opposite, entire, linear leaves. **Flowers yellow, terminal, pedicellate.**

*Lasthenia glabrata*, Decand., Vol. V., p. 665. Decumbent or erect, and branching from the base; smooth, except the pedicels; rays twelve to fifteen,

oval, bidentate, as long as the disk; sepals united into a hemispherical cup, toothed at its margin; receptacle conic, papillose.

## HELENIUM. (Linn.)

*Helenium *grandiflorum;* glabrous; leaves elliptic-lanceolate, acute or acuminate, widely decurrent, the lower ones subserrate; stem branching at the summit; pedicels very long and fastigiate; the linear, acuminate sepals numerous, and as long as the large, globular disk; rays flat, three to four-cleft; pappus white, fimbriate, awned, half the length of the discal florets.

Hab. Banks of the Oregon and Wahlamet; common. A stout plant, with very large, yellow flowers, much like *H. autumnale*, but never growing so tall, seldom exceeding a foot to eighteen inches, with leaves one to two inches wide, and three to four inches long, very irregularly serrated, often entire; with the rays longer than the disk, and never tubular. Achenium striated with strigose hairs on the ribs, the pappus white, with long awns, and lacerated or fringed at the sides. Remarkable for its large flowers, dwarf size, and very long pedicels meeting in a sort of corymb. **Stigmas exserted, smooth. Rays very long, and pubescent externally.**

*Helenium *montanum;* minutely pulverulent, pubescent; leaves lanceolate, decurrent, subserrate; flowers corymbose, on short pedicels; sepals linear, shorter than the disk; rays flat, mostly three-toothed; pappus acuminate, long-awned, half the length of the floret.

Hab. In the Rocky Mountain range, on the borders of Lewis' River, &c., twelve to eighteen inches high, the upper part hoary with pubescence. It has much the appearance of a dwarf variety of *H. autumnale*, but is more pubescent, smaller flowered, and with a much longer awned pappus.

*Helenium *parviflorum;* smooth; the stem much branched and divaricate, slightly angular; leaves lanceolate, or oblong-lanceolate, here and there subserrulate, scarcely decurrent; involucrum shorter than the disk; sepals filiform; rays flat, three-toothed, narrow; achenium rather smooth; pappus awned, half the length of the floret; flowers scattered, solitary or by pairs.

Hab. In Georgia. A very distinct and well marked species, scarcely at all bitter to the taste. Flowers scattered, not fastigiate, scarcely half the size of those of *H. autumnale*, to which this species has an affinity, the leaves are also generally entire and scarcely decurrent. Rays slightly pubescent externally.

### §. II. Tetrodus. (Decand.) *Discal florets four-toothed.*

*Helenium *nudiflorum;* glabrous; leaves remote, above small, lanceolate, decurrent, entire; stem tall, the summit divaricate and almost naked, few-flow-

ered; involucrum shorter than the globular, dark brown disk; rays few, flat, three-toothed; pappus lanceolate, brown and awned, about one-third the length of the discal floret.

Hab. The plains of Red River, Arkansa. A very elegant species, with deep orange or dark purple brown rays, pubescent externally. Stem three or four feet high, spreading and somewhat naked at the summit, pedicels long and grooved, involucrum a little pubescent.

*Helenium *micranthum;* nearly smooth; radical leaves narrow, linear-lanceolate, entire; lower leaves oblong-lanceolate, sparingly denticulate, decurrent, upper ones lanceolate, entire; stem slender, dichotomous; branchlets one to two-flowered, peduncles moderate; involucrum hirsute, shorter than the spherical, brown disk; pappus about a third the length of the discal floret, hyaline, apiculate; rays three-cleft, flat.

Hab. South Carolina. Allied to *H. nudiflorum*, but the capitulum about half the size, and the rays shorter, as well as the pappus, which is white, smaller and not awned. In *H. quadridentatum* the radical leaves are bipinnatifid.

*Helenium Mexicanum.* (H. B. and Kunth.)

Hab. Louisiana. (Teinturier.)

## Division II.—Galinsogeæ. (Decand.)

### *PTILONELLA. (Blepharipappus in part.)

Capitulum few-flowered, radiate; rays about three, ligulate, feminine, dilated and deeply three-lobed. Discal florets tubular-campanulate, five-toothed, hermaphrodite, the centre ones sterile. Branches of the style short, obtuse, rather smooth and exserted, the style hirsute; those of the rays smooth. Receptacle small, paleaceous, palea half-embracing, membranaceous. Involucrum subcampanulate, about eight-leaved, equal, the sepals half-sheathing, oblong. Achenium turbinate, villous, crowned with a short circle of plumose or ciliated pappus about a third its length; abortive central achenia narrow-linear, with a pappus of fewer and less divided rays; (rays filiform, from eighteen to twenty.)—An annual, much-branched, aromatic, slightly hirsute and scabrous-leaved plant. Stem smooth. Leaves alternate, narrow, crowded, linear, entire. Flowers lateral and terminal, fastigiate, *white*,

with dark purple anthers and stigmas. Allied, though remotely, to *Blepharipappus*, which ought to be referred to the MADIEÆ.—(Named from its minute, feathery pappus.)

*Ptilonella scabra.* *Blepharipappus scaber*, HOOK. Flor. Bor. Am., Vol. I., p. 316.

HAB. The prairies of Oregon, east of Walla-Walla. Erect, about a foot high, towards the summit dividing into numerous filiform, virgate branches, somewhat corymbose at their summits. Leaves numerous, minutely scabrous, linear, somewhat obtuse, attenuated below, sessile, from a quarter of an inch to an inch long, scarcely half a line wide. Stem smooth and shining. Involucrum and upper leaves glandular and viscid. Sepals oblong-lanceolate, a little hirsute. Rays two or three, white, widely dilated, about as long as the involucrum, with filiform, smooth stigmas. Discal florets about eight, also white; anthers and stigmas blackish purple. Infertile achenium nearly smooth, empty and barren, with a coarser pappus of about twelve filiform fimbriate scales. Radial florets sheathed by the sepals to their summits.

OBS. As this plant is wholly at variance with the published generic and specific character of *Blepharipappus glandulosus*, I have presumed to separate it as a genus.

## Division III.—MADIEÆ. (Decand.)

### MADIA. (Molini.)

*Madia sativa.*

HAB. In thē plains of Oregon towards the sea, particularly on Wappatoo Island, at the outlet of the Wahlamet.

*Madia *capitata;* very hairy and viscid; leaves linear, amplexicaule; flowers mostly in terminal clusters.

HAB. With the above, and in the Rocky Mountains, of which, except the inflorescence, it appears little more than a variety. Achenium black, smooth, granulated, rather flat, and somewhat four-sided. Rays trifid, rather conspicuous.

### MADARIA. (Decand.)

*Madaria *racemosa;* stem simple, erect; flowers axillary, racemose, on exserted pedicels; leaves narrow-linear, sessile, hirsute, radical serrulate; above, with the involucrum, pilose and glandular.

HAB. Plains of the Wahlamet, near the falls. Nearly allied, apparently, to *M. corymbosa*, but the flowers are not in a corymb, though sometimes fastigiate. Rays about fifteen, yellow, often with a dark brown spot at the base of each, deeply trifid, twice as long as the disk. Sepals

sheathing, with the summit free and foliaceous; discal florets dark brown, masculine. Receptacle convex, villous.

## *MADORELLA.

MADIA, but with the achenium compressed, and without angles, or nearly so.

Rays pubescent at the base, trifid, as long as the involucrum. Discal florets subcylindric, with a pubescent tube. Stigmas filiform, acute, slenderly and glandularly pubescent. Receptacular paleæ in a single series.—Biennials, with slender, virgate stems; capituli subglobose, naked, pedunculate; leaves entire, linear. Flowers pale yellow.—Nearly allied to *Madia*, but with a different habit and stigma.

*Madorella *racemosa;* hirsute, the involucrum also glandular; leaves linear, acute, the lowest ones opposite, radical ones only subserrulate; flowers axillary and terminal, racemose.

HAB. On the banks of the Oregon, near the estuary of the Wahlamet. Stem slender, rigid and twiggy, involucrum of about twelve carinate embracing sepals, with leafy tips. Rays rather long, trifid, their styles filiform, nearly smooth, and equal. Discal florets five-toothed, pale yellow, numerous, all fertile: a single row of leafy scales outside the discal florets, the rest of the receptacle naked. Achenium smooth, finely granulated as in Madia.

*Madorella *dissitiflora;* hairy and viscid; stem slender, virgately branched; flowers axillary, lateral and terminal, shortly pedicellate; leaves linear sessile, on the branches very short.

HAB. In the Blue Mountains and plains of the Oregon. A slender, often much branched twiggy plant, with naked flowers, and a very viscid, almost spherical involucrum. Achenium granulated, flat, slightly and obsoletely angular. Rays small, trifid, pale yellow.

## *MADARIOPSIS.

MADARIA, but with the discal florets fertile, and a very strongly *tuberculated* achenium in both ray and disk; that of the ray curved, and unequally three-sided, with a small, oblique rostrum and an acumination at base; the central achenia unequally five-sided, compressed, the surface without the granular lines of *Madia*. Several rows of exterior discal florets, with a curved tube. Rays white, or ochroleucous, at length red, with a pubescent tube scarcely longer than the disk.

*Madariopsis * Chilensis;* biennial, glandular and hirsute; leaves linear, entire, sessile; flowers disposed in an irregular, small corymb, or raceme.

Hab. Chili. (Dr. Styles.) Probably near Valparaiso. Apparently biennial; twelve to eighteen inches high. Stem simple. Radical leaves very hirsute, those of the stem are also thickly clothed with glanduliferous hairs; sepals embracing the fruit, the summits free, very hirsute on the back as well as glandular, villous on the margin, twelve to fourteen, with the same number of trifid rays. Interradial involucrum shorter than the outer, composed of separate lanceolate leaves. The habit is exactly that of *Madaria racemosa*, or nearly so, but the achenia are black, and remarkably tubercular; those of the disk numerous, the exterior ones curved. Stigmas short, slightly pubescent, and somewhat acute.—I introduce this plant to complete, as far as I am able, the history of the section Madieæ.

## *ANISOCARPUS.

Capitulum many-flowered, heterogamous; rays feminine, about twelve, ligulate, flat, exserted, smooth, the apex dilated and trifid. Discal florets smooth, hermaphrodite, sterile, five-toothed, campanulate. Stigmas filiform, acute, hirsute, exserted. Involucrum subglobose, the sepals in a single series, carinate, embracing the fruit, the points free and acute. Receptacle flat, smooth, with a single row of scales between the ray and disk, the centre naked. Achenium of the ray compressed, granulated, naked, without angles; those of the disk abortive, linear, crowned with a small, chaffy pappus of five to eight short, lacerated, or fimbriated scales.—Hirsute, perennial herbs, with linear leaves, entire or denticulated, below opposite, above alternate. Flowers yellow, rather conspicuous, in a paniculated, few-flowered corymb.—Nearly allied to *Madaria*, of which it has entirely the aspect, but the flowers less conspicuous. Approaches Calycadenia by the fruit, but very different in habit, and with the rays of Madia.—(The name from ἄνισος, *unequal*, and καρπος, *fruit*. Alluding to the different characters of the achenium in the ray and disk.)

*Anisocarpus * Madioides.*

Hab. On the banks of the Oregon, among rocks, in shady forests, at the outlet of the Wahlamet; rather rare. Hirsute with long and short hairs, the stem and involucrum also glandular. Radical leaves oblong, linear, or oblong-lanceolate, remotely serrulate, rather crowded, three or four inches long, about half an inch wide. Stem simple, most hairy at the base. Stem leaves linear, sessile, entire, acute, diminishing in size upwards; the stem above attenuated, about eighteen inches or

two feet high; the flowers racemose, and in strong plants corymbose or with fastigiate few-flowered branches. Involucrum that of *madaria;* rays shorter, deep yellow, rather showy. Achenium black and smooth, similar to that of Madaria, but without angles. Pappus of the central florets almost like that of Bahia, obtuse and fringed.

## *HARPÆCARPUS.

Capitulum many-flowered, radiate; rays feminine, in a single series, about five to eight, truncated, very short, and two-lobed, scarcely as long as the filiform style. Discal floret one! tubular, five-toothed, hermaphrodite, fertile. Style scarcely exserted, short, nearly smooth, and somewhat obtuse. Involucrum spherical, five to eight-leaved, the sepals carinate, closely investing the achenium, and falling off in connexion with the mature fruit. Receptacle very narrow, containing within the ray a foliaceous, pubescent, and glandular involucrum of five wholly united leaves, surrounding the single hermaphrodite floret! Achenium of the ray compressed, smooth, falcate and granulated, produced at the base and summit; central achenium nearly straight and somewhat angular, naked.—Hirsute annuals of Oregon. Stem simple, corymbosely paniculate. Capituli long pedicellate, glandular; flowers minute, yellow. Leaves linear, entire, the lower ones opposite. A very distinct genus, though still closely allied to *Madia;* but the falcate achenia fall off invested by the deciduous sepals; and the only hermaphrodite central floret, like a true proliferous flower, is entirely separated by an involucrum similar to that of the ray, and united into an entire, five-toothed cup. The whole plant of an aromatic odour.—(The name from ἁρπη, *a sickle,* and καρπος, *fruit;* in allusion to the form of the fruit.)

### *Harpæcarpus Madarioides.*

Hab. On Rocky plains in depressions, at the outlet of the Wahlamet. Common; flowering in May. From a few inches to two feet high. Hirsute with rather long hairs. Leaves about a line wide, one to two inches long, acute, entire, except the radical ones, which are sometimes slightly denticulate. Capitulum glandular, depressed spherical, somewhat smaller than a grain of black pepper. Pedicels various, in the fruiting state two to three inches long, in other smaller specimens the flowers are nearly sessile, except the terminal ones. Flowers pale yellow.

## *AMIDA.

(A transposition of *Madia*, in allusion to its affinity to that genus.)

Capitulum heterogamous or homogamous, few-flowered; rays none, or one or two, irregular, very small, ligulate, three-toothed. Discal florets hermaphrodite, cylindric, one to five. Stigma included, small and obtuse. Receptacle naked, very small. Involucrum oblong or ovate, of two to five oblong, or lanceolate sepals, embracing the deciduous fruit. Achenium oblong, compressed, four-sided, naked, and granulated; in the radial florets sheathed with the sepals.—Viscidly glandular annuals, with entire leaves, the lower ones opposite; flowers small, in terminal clusters, bracteolate, bractes and sepals covered with conspicuous, pilose glands. Allied to *Madia*, and remarkable for its singular depauperation.

*Amida * gracilis;* hirsute and scabrous, with close-pressed hairs; sepals convex, very glandular.

Hab. Rocky Mountain plains and prairies of the Oregon. The whole plant fragrant from glandular exudation. About a foot high. The stem simple, sometimes branching towards the summit, slender and rigid. Leaves narrow-linear, rather crowded, hirsute, and scabrous, the hairs close-pressed. Flowers small, yellow, in irregular axillar and terminal clusters; involucrum sometimes with only one or two flowers, at other times with five. Rays often wanting.

*Amida * hirsuta;* hirsutely pilose with spreading hairs; leaves linear, scabrous, and ciliated on the margin; sepals hirsute and glandular, carinated.

Hab. With the above, from which it is distinguished by its pubescence and larger capituli with broader sepals. The rays are also larger and more regular in their association.

## *LAGOPHYLLA.

Capitulum few-flowered, radiate; rays feminine, about five, ligulate, flat, dilated, three-lobed, externally pubescent. Discal florets hermaphrodite, sterile, five to six. Stigmas hirsute, filiform, equal. Involucrum five-leaved, similar with the leaves, lanceolate, flat, closely sheathing the fruit, the apex free. Receptacle minute, with a verticil of five leaves within the ray, and surrounding the sterile florets. Achenium cuneate, convex externally, and carinated within, perfectly even, (without any granulations,) the rudi-

ments in the central florets merely filiform.—An exceedingly branched herb, with a smooth stem. Leaves alternate, small, linear-oblong, imbricately crowded on the branchlets and around the capitulum, remarkable for their abundant, soft, white, silky hairs, thickly spreading from the margin, so as to resemble almost the foot of a hare. Capitulum terminal, sessile among the leaves. Rays wide and conspicuous, three-lobed, very evanescent, and convolute when withered. Allied to *Madia*, but with a very different habit and distinct achenium, almost exactly like that of Parthenium.—(Named from the leaves being clad with long, soft hairs.)

*Lagophylla *ramosissima;* ♃?

Hab. In the prairies near Walla-Walla, in Oregon. Stem two or three feet high, exceedingly branched; smooth and shining, brownish. Leaves deciduous from the lower part of the stem and branches; upper branchlets very numerous, alternate, short and one-flowered, crowded with small linear-oblong leaves. Leaves about a third of an inch long, less than a line wide. Rays pale yellow, and large, but very evanescent, only expanding, apparently, in the sun-shine. Achenium black and shining, three-sided by an internal carination, without any of the elegant granulations visible on the seeds of Madia. Slightly bitter from minute glands on the surface of the leaves.

## HARTMANNIA. (Decand.)

*Hartmannia *glomerata;* ⊙, hirsute; leaves alternate, pinnatifid, sessile, upper ones entire; stem branching above; flowers in terminal clusters; rays about five, dilated oval, trifid at the summit; achenium gibbous, muricate and rugose, in the ray naked, in the disk infertile with a six to eight-leaved, acute, paleaceous pappus.

Hab. St. Pedro, Upper California. Common; flowering in April. Involucrum viscid and fragrant, as well as the bractes and upper leaves. A very elegant species with abundance of bright yellow flowers, in dense clusters; sepals and bractes lanceolate, acute; sterile flowers six to eight, surrounded by a nearly entire pentangular involucrum. Pappus six to eight, acute, lacerated scales, nearly half the length of the floret. The plant six to eighteen inches high, and more or less hirsute.

## *OSMADENIA.

Capitulum many-flowered, radiate; rays feminine, about five, long tubular, with the border equally three-cleft to its base. Discal florets hermaphrodite, tubular and attenuated, the border deeply five-toothed and glandularly pu-

bescent, the teeth linear and acuminate. Stigmas exserted, hirsute and filiform, subacute. Involucrum ovate, five-leaved, sepals lanceolate, embracing the achenium. Receptacle naked, alveolate, excepting a verticillated, pentangular, five-toothed cup, interposed between the ray and disk. Achenium of the ray obovate, three-sided, rugose and naked, with a minute rostrum; that of the disk turbinate, crowned with a pappus of four or five long, scabrous awns, and the same, or a smaller number of intermediate, minute, obtuse, fimbriated scales.—An elegant and delicate annual, of a powerful, and most agreeable odour; stem divaricately branching from near the base, branches almost capillary; flowers solitary, terminal, fastigiate, white in both ray and disk; involucrum viscidly glandular, subtended by three acerose bractes. Leaves alternate, linear, hirsute, entire. Allied to *Calycadenia*, but with the discal florets perfect, the palea of the receptacle united, and the pappus double.—(The name from *οσμη*, *odour*, and *αδην*, a *gland;* in allusion to the fragrance of its glandular exudation.)

*Osmadenia * tenella.*

Hab. St. Diego, Upper California. Flowering in May. Root simple, tap-shaped, slender. Radical and lower stem leaves crowded, somewhat hirsute and strongly ciliate, two or three inches long, less than half a line wide, and revolute on the margin. Branches very divaricate; upper stem leaves rather distant and acute, rigid, almost acerose. Stem six inches to a foot high, nearly smooth and brown, spreading out usually more than its height. Three or four leaf-like narrow bractes usually beneath the involucrum. Sepals lanceolate, shorter than the internal leaf-like involucrum. Rays about the length of the involucrum, flat, cleft into three lanceolate segments down to the base, the tube very slender, about the length of the border, nearly smooth. Stigmas of the ray very long, filiform, equal and smooth. Stamens yellow. Achenium of the ray without pappus, black, smooth, and shining, rugose, obovate, short, and three-sided, with a minute, projecting epigynous disk, and a prominent narrow cicatrice at the base. Discal florets six to eight, the achenium cylindric, turbinate, thinly villous, crowned with a pappus of four or five acuminated, thick, scabrous, rigid awns, twice its length, between which are interposed alternately, and internally as many, or a fewer number, of obtuse fimbriated scales, less than a fourth their length; the florets longer than the pappus, narrow tubular, with remarkably long, linear, acuminated, glandular teeth; the stigmas exserted, long filiform, hirsute, rather acute.

## MADAROGLOSSA. (Decand.)

Capitulum many-flowered, radiate; liguli feminine in a single series, the apex trifid. Discal florets hermaphrodite, tubular, five-toothed, pubescent. Stigmas filiform, hirsute, acuminated, at length exserted. Receptacle naked, villous, with a single row of paleæ between the ray and disk. Involucrum hemispherical, sepals lanceolate, in a single series, (eight to twelve,) the base embracing the achenium, the summit free and foliaceous. Achenia of the ray smooth, linear-oblong, externally convex, acute, almost stipitate at base, without granulations, crowned with a circular, areolar cicatrice; those of the disk numerous, villous, acutely conic and narrow, crowned with a paleaceous-pilose, subscabrous pappus, simple, or plumose towards the base, of eighteen to twenty-five setæ.—Herbaceous, annual or biennial, usually hirsute plants, with alternate, pinnatifid, or incise, linear leaves; branches one-flowered, fastigiate, the apex naked or pedicellate. Flowers yellow, or parti-coloured yellow and white in the ray, disk yellow; anthers dark brown.

*Madaroglossa *elegans;* decumbent, somewhat hirsute, much branched from the base; radical leaves pinnatifid, linear-lanceolate; stem leaves amplexicaule, incise, the uppermost entire; pedicels somewhat glandular and villous; rays ten to twelve, (apparently) of one colour; receptacle villous; pappus of eighteen to twenty setæ, densely plumose towards the base.

Hab. St. Barbara, Upper California. Nearly allied to *M. heterotricha;* but in that species the leaves are entire.

*Madaroglossa *carnosa;* ⊙, stem decumbent, pilose towards the summit, as well as the involucrum; leaves linear-oblong, succulent and smooth, incisely dentate; capituli subsessile, solitary; sepals linear, obtuse, softly pubescent; rays very small; achenia pubescent in both ray and disk; pappus loosely plumose, of about eighteen to twenty setæ.

Hab. St. Diego, Upper California. A dwarf, inconspicuous flowered species, three or four inches high, with thick, somewhat succulent leaves. Rays two or three-toothed, minute. Sepals about twenty, in two series; the rays between the two series, with the achenium included in the sepals, and without pappus. Achenium linear, villous, attenuated at base, subquadrangular. Anthers with black, acute, linear cusps. Stigmas hirsute, subulate, a little exserted, spreading. Pappus

as long as the florets. A very distinct and peculiar species, and apparently rare, growing in the sands of the sea-coast. Flowering about May.

### §. Callichroa. (Genus Callichroa, Fisher and Meyer.)

*Receptacle flat, villous, or fimbrilliferous. Pappus of about twenty-five setaceous, scabrous paleæ in a single series.*

Obs. So nearly are these plants allied to the preceding section, or true Madaroglossa, that it is nearly impossible to distinguish *M. hirsuta* from *M. elegans* in any way but by the pappus.

*Madaroglossa * hirsuta;* hirsute, decumbent, much branched from the base; radical leaves pinnatifid, linear-lanceolate; stem leaves amplexicaule, incise, the uppermost entire; pedicels somewhat glandular and villous; rays eight to twelve; pappus simple, subhirsute, shorter than the achenium.

Hab. St. Barbara and Monterrey, Upper California. Spreading sometimes one or two feet on the ground, with decumbent, ascending branches. Rays longer than the disk, the extremities white, the base yellow. The whole plant has an aromatic scent, somewhat similar to that of the garden Marygold, (*Calendula.*) Achenia of the disk sericeous, with a rigid pappus nearly its length; the floret also pubescent, and partly hirsute on the border.

*Madaroglossa * angustifolia;* subhirsute and glandular, nearly erect; leaves linear, incisely pinnatifid, sessile, above entire; pedicels glandular and villous; rays eight to twelve; pappus simple, subhirsute, as long, or longer than the achenium.

Hab. With the above, which it greatly resembles, but is smaller, with narrower leaves and a different pappus. Rays also partly white and yellow at base,

## Subtribe VI. ANTHEMIDEÆ.

### Division i. Euanthemideæ. (Decand.)

Achillea *lanulosa*, Nutt. in Journ. Acad., l. c.

Hab. Frequent in the valleys and plains of the Rocky Mountains, and in Oregon.

### Division ii. Chrysanthemeæ. (Decand.)

Egletes *Arkansana*. *Leucopsideum Arkansanum*, Decand., Vol. VI., p. 43.

Hab. Banks of the Arkansa. This plant appears to be wholly congeneric with *E. Domingensis:* differing principally from that species by the greater length of the rays.

## VENEGASIA. (Decand.)

Capitulum many-flowered, radiate; rays feminine, numerous, fertile. Discal florets hermaphrodite, tubular-campanulate, five-toothed, the tube glandularly hirsute. Stigmas obtuse, puberulous, terminating in an obscure and very short cone. Receptacle naked, punctate, the margin paleaceous. Involucrum loosely imbricated in about two series of large, rounded, foliaceous sepals. Achenium of the ray and disk similar, naked, without pappus, oblong, grooved, scabrous and four-sided.—An undershrub of Upper California, with all the aspect of a *Silphium*. Puberulous; leaves alternate, deltoid-cordate, dentate; branches one-flowered, leafy; flowers yellow.

*Venegasia Carpesioides*, Decand., Vol. VI., p. 43.

Hab. In rocky situations near the sea, around St. Barbara, &c., Upper California. Lower part of the stem shrubby, the upper part considerably branched, puberulous, and scattered with numerous small, shining glands, of a slightly bitter taste, and with something the aroma of the garden Marygold. Petioles about an inch long. Leaves deltoid-cordate, mostly serrate, acute, (sometimes nearly entire,) with three principal, slender, spreading nerves; about two inches long, and two to three wide. Involucrum very similar to that of a Silphium, composed of two or three series of dilated, roundish, cordate leaves, somewhat spreading, but closely imbricated at base, which, internally, is covered with a matted tomentum. On the margin of the receptacle there occurs one or two rows of large, oblong, partly membranaceous paleæ, somewhat torn on their margins. Rays about fifteen, oblong, entire, longer than the disk; the whole flower about two inches in diameter, with both ray and disk yellow. Achenia about the size of Caroway seeds, black, with a rather large and prominent epigynous disk.

### Division iii. Cotuleæ. (Lessing.)

## *AROMIA.

Capitulum many-flowered, discoidal, heterogamous; rays feminine, minute, truncated, (five or six,) bidentate; discal florets very short and rather round, about a third the length of the achenium, glandular, minutely five-toothed, closed. Stigmas short, subcapitate or obtuse. Receptacle naked. Involucrum subhemispherical, of a single row of angular, oval, imbricated sepals, about five in number. Achenium subhirsute, linear, obconic, compressed,

partly four-sided. Pappus paleaceous, formed of a small crown of twelve, or more, linear, obtuse segments, partly united at base.—A very aromatic annual or biennial plant of Upper California, branching from the base; leaves alternate, ternately dissected, the segments almost filiform. Flowers corymbose, yellow, without any projecting rays. Upper part of the plant glutinous and aromatic, the scent something like that of the officinal Chamomile, but more agreeable.—(The name from αρωμα, *aroma;* in allusion to the agreeable and powerful odour of the plant.)

*Aromia * tenuifolia.*

Hab. Near the coast of St. Diego, Upper California. Smooth, but glutinous above, bitter to the taste; when luxuriant, branching from the base, at other times more towards the summit, stems and branches fastigiate. Leaves filiformly linear, rather long petiolate, mostly trifid at the summit, some partly pseudopinnate, with a few shorter segments than the terminal ones; uppermost leaves entire. Capituli numerous, small and inconspicuous, yellow, rather less in bulk than a grain of black pepper, roundish-obovate, or narrower at the base, nearly sessile; corymb trichotomous. Rays, or feminine florets minute, not at all exserted, and scarcely distinguishable from the discal florets, but by the projecting stigmas. Receptacle narrow. Discal florets ten to twelve. Pappus about a third the length of the achenium, which is about a line long. Flowering in the month of May. Stem six to ten inches high. Leaflets about as narrow as those of *Pinus strobus*, two to three inches long.—Although artificially placed in this section, the present plant presents no affinity with any genus included in it.

## *LEPIDANTHUS.

Capitulum homogamous; florets tubular, minute, three to four, rarely five-toothed, the tube alated. Receptacle naked, acutely conic, higher than the involucrum. Involucrum hemispherical, biserial; sepals oval, obtuse, broadly scariose, and nearly equal. Stigmas exserted, short, filiform, obtuse. Achenium naked, subquadrangular, flattened at the summit, with a large epigynous disk.—A somewhat decumbent, much-branched annual, with alternate, pseudobipinnate, linear leaves, the terminal segments trifid; branches one-flowered. Involucrum with all the sepals scariose; disk conic, elevated above the involucrum. Allied to *Pyrethrum* by the alated tube of the discal florets, but distinct in other respects.—(The name alludes to the scaly appearance of the involucrum.)

*Lepidanthus suaveolens.*

Hab. In Oregon. Generally in open wastes, or by the banks of streams. *Santolina suaveolens*, Pursh, Vol. II., p. 520. Decand, Prod. Vol. VI., p. 37. *Tanacetum matricarioides*, Less. Syn. Gen. Compos. *Artemisia matricarioides*, Less. in Linnæa, Vol. VI., p. 240. *Tanacetum? suaveolens*, Hook. Flor. Bor. Am., Vol. I., p. 327. *Pyrethrum breviradiatum*, (Herb. Schweinitz, from Ledebour,) from Unalashka, where it was also collected by Chamisso. These specimens are apparently depauperated with very few sessile flowers.—For several years it came up as a weed in the garden of the late Mr. M'Mahon, near Philadelphia, where it was raised from seeds brought by Captain Lewis.

## Division v.—Artemisieæ. (Lessing, Decand.)

## ARTEMISIA. (Linn.)

### Section i. Dracunculus.

*Artemisia Nuttalliana*, (Besser.) *A. cernua*, Nutt. Gen. Am., Vol. II., p. 143, (1818.) *A. Dracunculus*, Pursh, Vol. II., p. 521. *A. Dracunculoides*, idem. in Suppl., Vol. II., p. 742.

Hab. Common in the open prairies, from the immediate vicinity of St. Louis to the Rocky Mountains.

### Section ii. Seriphidium. (Bess.) *Receptacle naked; capitulum homogamous.*

*Artemisia *Plattensis;* ♄; leaves softly and sericeously villous, cinereous, filiform-linear, revolute on the margin, simple and trifid towards the summit; capituli very small, tomentose, ovate, nodding and pedicellate, disposed in a loose and regularly simple-branched panicle.

Hab. Upper plains of the Platte, and nearly to the Kansa agency. A whitish silky leaved shrub, three or four feet high, much branched, the branches slender and virgate. Flowers very small. Sepals ovate, unequal, none of them scariose. The scent similar to that of *A. Abrotanum*, nearly allied to *A. filifolia* of Torrey, but the flowers are loosely paniculate.

*Artemisia *foliosa;* ♄; leaves covered with a very short, dense tomentum, green or canescent, filiform-linear, revolute on the margin, simple and trifid towards the summit; axills leafy; capituli roundish, tomentose, sessile, clustered in a narrow panicle with an angular rachis; scales oval or round, the inner scariose.

Hab. Common round Monterrey, in Upper California. Nearly allied to the last, but distinct in its inflorescence. Leaves about one and a half inches long, the undivided part resembling a petiole,

rather longer than the trifid summit; axills full of small leaves, at least before the flowering period; branches long and virgate. I have only seen winter vestiges of the flowers; these are apparently five or six in a capitulum. Leaves rather rigid. A shrub four or five feet high.

*Artemisia *trifida;* ♄, canescently sericeous; leaves linear, trifid towards the summit, flat and obtuse, the upper ones entire; panicle simple, leafy; flowers sessile, conglomerated; capitulum small, cylindric-ovate; outer sepals lanceolate, pubescent, the inner oblong and scariose.

Hab. Plains of the Rocky Mountains and Oregon. A very dwarf species compared with the preceding, six or eight inches high; the leaflets are also broader; the flowering branches also cylindric, and the capitulum smaller, but still larger than in *A. Plattensis*. From the plains of Lewis' River, in the Rocky Mountains, I have a variety, β. **rigida*, in which the leaves are shining and silky, rigidly three-forked and acute; but of this I have no flowers. It is, perhaps, a distinct species.

*Artemisia *arbuscula;* dwarf and shrubby; canescently sericeous; leaves short, cuneate, trifid; segments oblong-linear, obtuse, flat, the lateral lobes sometimes bifid or trifid, uppermost simple; capituli racemose, globose-ovate, closely sessile, erect, solitary, or in three-flowered, pedicellated clusters; branches slender, outer sepals tomentose, the inner oblong and scariose; florets about ten, smooth.

Hab. On the arid plains of Upper California, on Lewis' River. A very diminutive shrub, four to six inches high, with a rather thick, woody stem; branches virgate. Allied to the preceding, but very distinct; the capituli twice as large, the leaves short, the limb longer than the undivided base, and the divisions much broader, &c. Allied to *A. mendozana*.

*Artemisia *tridentata;* ♄; canescently tomentose; leaves cuneate, three-toothed at the summit, upper ones entire and obtuse; flowers paniculate; capitulum sessile, ovate and tomentose, small; inner sepals scariose, linear-oblong.

Hab. Plains of the Oregon, and Lewis' River. A low, but rather stout shrub, white with a close tomentum. Leaves rather more than an inch long, about two lines wide, more or less deeply three-toothed, sometimes entire, the upper ones always so. Panicle much branched, the flowers small. (I have not seen them in a perfect state, and therefore class this species by its apparent affinity with the last.) Somewhat allied to *A. Chinensis*.

*Artemisia Columbiensis*, (Nutt. Gen. Am.;) ♄; canescently tomentose; leaves long and acute, lanceolate-linear, all entire, not revolute, and equally pubescent; panicle simple, subracemose; capituli ovate, erect, small, sessile; sepals tomentose, the outer lanceolate, the inner oblong, obtuse, scariose on the margins; florets five to six, smooth.

Hab. On the plains of the Missouri, and along the Platte to the mountains. Certainly distinct from the *A. cana* of Pursh.

§. *Tanaceum.—*Receptacle convex, pilose or lanigerous. Achenium acutely costate, terminated by a membranaceous, somewhat lobed margin.—Shrubs, with trifid or twice trifidly-pinnately dissected leaves. Capituli as in Abrotanum.

*Artemisia Fischeriana*, and variety *β. vegetior* (of Besser,) probably a distinct species.

Hab. The Bay of St. Francisco, Upper California. If the variety β. agrees in the character of the receptacle with the species to which it is referred, I have not seen the plant.

*Artemisia *abrotanoides;* ♄; canescent and pulverulently pubescent; leaves pseudopinnate towards the extremity, with a few (two pair) of filiform segments; upper leaves entire; panicle simple; capituli hemispherical, large, nodding, on bracteolate pedicels; sepals oval, broadly scariose on the margin.

Hab. Near St. Barbara, Upper California. Receptacle somewhat pilose. A shrub with much the appearance of *A. Abrotanum*. Common. Branches whitely canescent.

§. III. Abrotanum. (Bess., Decand.) *Flowers heterogamous, all fertile.*

*Artemisia *pedatifida;* very dwarf and suffruticose, somewhat canescently tomentose; leaves towards the summit trifid, or more or less subdivided into bifid, or trifid, linear, and very narrow segments; stems numerous, subcæspitose, simple, terminating in a short, few-flowered spike; capituli ovate, sessile, subtended by simple or trifid leaves; inner scales scariose; florets smooth, about ten.

Hab. Arid plains of Lewis' River, Rocky Mountains. Flowering in August. A very distinct and peculiar species, with a stout, woody, exfoliating root, sending out tufts of low stems, about three or four inches high, terminating in spikes of from about four to ten flowers: capituli towards the summit, conglomerated by threes; leaflets almost filiform-linear, but flat, often only trifid, but also with the lateral lobes bifid or trifid.

*Artemisia *pumila;* herbaceous, very dwarf; leaves linear, sublanceolate. nearly smooth or pubescent, tomentose beneath, trifid or incisely subpinnatifid with few apiculated segments; axills pseudostipular, the stipules simply subulate, or two or three-cleft; flowers in a simple, leafy spike, sessile, axillary, solitary, or in clusters of two or three; capituli roundish-ovate; inner segments of the involucrum oval and scariose; flowers polygamous.

Hab. In the Rocky Mountains, Lewis' River, by ponds, or in depressions. About six or eight inches high. Leaves about a quarter of an inch wide, the upper ones simple, all acuminate; an inch or more long. Raceme few flowered; flowers sessile, exterior sepals ovate. Some plants with the flowers apparently all feminine, others all masculine, and a third set have about ten tubular, hermaphrodite florets, and three or four female ones, all smooth.

*Artemisia longifolia,* (Nutt. Gen. Am.) In this species, which is wholly herbaceous, the leaves are long, linear and acuminate, revolute on the margin, tomentose beneath; though often entire, they are also as often trifid, or forked towards the summit, the central segment, also, now and then subdivided; the segments all linear, about half a line wide; the simple leaves not apparently nerved.

*Artemisia Ludoviciana,* (Nutt. Gen. Am.)

Hab. Along the plains of the Platte, to the Rocky Mountains. From half a foot to three or four feet high; herbaceous, whitely tomentose on both sides; the lower leaves laciniated, lanceolate, upper entire; capitulum roundish-ovate. β. **latiloba;* leaves tomentose, whitely so beneath, the lower dilated and pinnatifidly lobed, the upper trifid and cuneate, uppermost, oblong-lanceolate, rather acute; flowers in a close, narrow panicle, sessile; capituli globose-ovate, tomentose, the inner scales scariose; florets numerous, smooth, apparently polygamous.—Hab. With the above, in the Rocky Mountains: if not the *A. cana* of Pursh it may perhaps prove new. I have seen a second specimen in Dr. Torrey's herbarium, which differs in being less tomentose above.

*Artemisia *heterophylla;* stem stout, and herbaceous; capituli and the upper surface of the leaves smooth; leaves long lanceolate, acuminate, irregularly and sparingly laciniate, above entire, beneath whitely tomentose; capituli compoundly and closely paniculate, cylindric-ovate, and small; sepals oblong, scariose, few-flowered.

Hab. In the Rocky Mountains, by streams. A tall plant, somewhat allied to *A. vulgaris*, but still more to *A. integrifolia.* Remarkable for its small, sessile, erect capituli, which are very numerous; the plant is also gigantic, three or four feet high.

*Artemisia *incompta;* herbaceous; smooth, except the under surface of the leaves, which is a little tomentose; leaves almost simply pinnatifid, trifid or laciniate, sessile, the segments rather broad, linear and acute; flowers paniculated; capituli subglobose, pedicellate, erect; sepals ovate and scariose; florets numerous, smooth.

Hab. In the central chain of the Rocky Mountains, in Thornberg's Pass, near the great passage to the plains of the Oregon. At first sight it somewhat resembles some variety of *A. vulgaris*, but is very distinct. Remarkable for its smoothness. Height one to two feet; segments of the leaves a line wide.

*Artemisia biennis*, (WILLD.)

HAB. On the plains of the Platte, and in the Rocky Mountains.

*Artemisia pychnostachya*, (DECAND.;) herbaceous, every where softly and canescently lanuginous; leaves pseudopetiolate, bipinnately dissected; segments fastigiate, oblong, acute, simple, or partly subdivided; panicle racemose, very long, and of nearly equal breadth, many-flowered; capitulum sessile, subglobose, erect, about ten-flowered; sepals lanceolate, all lanuginous.

HAB. On the sea-coast of Monterrey, Upper California. A species with almost the foliage of *A. Absinthium*, but very soft and lanuginous with somewhat spreading hairs. Perennial, with a running root. Panicle two or more feet long; branches short, the flowers clustered. (I have only seen the winter vestiges of this curious species.)

*Artemisia *Pacifica;* herbaceous, soft, and canescently sericeous; leaves pseudopetiolate, bipinnately dissected, the segments often trifid, oblong or linear, acute; stem leaves pinnately dissected, pseudostipulate on the infertile shoots; stem and ovate, pedicellate capitulum, smooth.

HAB. Shores of the Pacific, at the outlet of the Oregon, in sandy places. Considerably allied to *A. canadensis*, but more tomentose, with broader and fewer segments to the leaves, the radical and lower leaves very much as in the last species. Perhaps *A. desertorum*, γ. *Scouleriana* of HOOK. Flor. Bor. Am., p. 325.

## TANACETUM. (Lessing.)

*Tanacetum Huronense*, NUTT. Gen. Am., Vol. II., p. 141. *T. Douglasii*, DECAND. Prod., Vol. VI., p. 128. *Omalanthus camphoratus*, HOOK. Flor. Bor., Vol. I., p. 321. *O. camphoratus?* LESS.

HAB. Coast of the Pacific to California; common. Rays and disk pale yellow, the former scarcely exserted.

*Tanacetum *boreale;* softly hairy; leaves and segments also bipinnatifid, apiculate, rachis leafy, the leaflets pinnatifid; corymb few-flowered, (four to five;) sepals lanceolate, the inner with brown, scariose margins; rays conspicuous, three-lobed.

HAB. Arctic America, (HOOKER.) Apparently not the *T. pauciflorum*, in which the flowers are said to be all hermaphrodite, and the plant very smooth.

## *SPHÆROMERIA.

Capitulum many-flowered, discoid, heterogamous; florets all tubular, the radial feminine, (about five,) truncate, two or three-toothed; discal florets hermaphrodite, shortly five-toothed; style bifid, stigmas truncate, and minutely

fringed at the apex. Receptaculum papillose, naked. Involucrum roundish-ovate, imbricate; sepals from five to ten in a single or double series, obtuse, and broadly scariose on the margin. Achenium turbinate and smooth, three to five-angled, with a vesicular testa, terminated with a small, paleaceous, unequal cup of three to five, or more, acute scales.—Low alpine, cæspitose or suffruticose perennials, canescently tomentose, with simple scapoid stems, terminating in a single spherical, or somewhat round lobed cluster of capituli. Leaves alternate, cuneate, pseudopetiolate, once or twice trifid, with the segments linear and entire; florets yellow. Allied to *Artemisia*, and with the same aroma, but with a different habit.—(The name in allusion to its capitate inflorescence.)

*Sphæromeria *capitata;* dwarf and cæspitose, canescently sericeous; leaves once or twice trifid towards the summit, sheathing at the base, segments linear-oblong; leaves of the scapoid stem simple; capituli conglomerated into a spherical head; involucrum about five-leaved.

Hab. On a high hill, near the Red Butes of the Platte, towards its northern sources on the Sweet Water. Flowering in June. Growing on the summit of a rocky hill, in round tufts of densely matted herbage, soft, silky and hoary with pubescence; scapes or scapoid stems slender, three or four inches high, the spherical cluster about the size of a small cherry. Scales of the involucrum oval, concave, hairy on the margin. Radial florets short and truncated, two or three-toothed, becoming enlarged and indurated at base. Discal florets about eight or ten, mostly infertile, with rudimental achenia. Style of the ray bifid, obtuse, cleft half way down, minutely pencillate at tip. Achenium somewhat three-sided, the angles terminating in a minute crown of acute pappus. The seed (at least in a young state,) enveloped in a utricular loose testa. The odour of the plant agreeable, almost like that of chamomile.

*Sphæromeria *argentea;* suffruticose and somewhat cæspitose, whitely and closely tomentose; leaves cuneate, entire, or three-cleft at the summit, the uppermost also minute and undivided; stem simple, terminating in a single, rather round cluster of capituli; involucrum biserial, ten-leaved.

Hab. In the Rocky Mountains, near the sources of the Platte, and Colorado of the West. Flowering in July.—A very elegant and diminutive shrub, with the taste and odour of wormwood, but more agreeably aromatic; the flowers bright yellow. Leaves about half an inch long, one to two lines wide. Stem about four inches high, very slender, like a leafy peduncle, terminating in a round, or hemispherical cluster of three to five capituli. Outer scales of the involucrum ovate. Radial florets about five. Achenia about five-angled, with an unequal pappus of five or more parts, longest on the angles; testa loose and utricular. Receptacle papillose. Discal florets numerous. Stigma truncate, and minutely pencillate.

## SOLIVA. (Ruiz and Pavon.)

Soliva **daucifolia;* hirsute, diffuse, dichotomous; leaves long petiolate, bipinnately divided, the lobes mostly three-parted, segments linear, sublanceolate, acute; capituli sessile in the forks of the stem; achenium obovate, scabrous, slenderly margined, convex externally, and minutely bidentate at the summit.

Hab. On the dry grassy downs within the limits, and in the immediate vicinity of St. Barbara, Upper California. Annual, at first smooth; involucrum and upper leaves very hirsute, the former about five-leaved. Stigma filiform, distinctly bifid. Plant about two inches high, extending four or five inches; the persistent style or rather its sheath, extending out like a rigid spine.

## GNAPHALIUM. (Linn.)

*Gnaphalium Californicum;* ⊙, Decand. Prod., Vol. VI., p. 224.

Hab. Common round St. Barbara, Upper California. Flowering in April and May. It appears to have a near affinity to *G. decurrens*, but with a different pubescence.

*Gnaphalium Sprengelii?* ⊙.

Hab. Near St. Barbara. Of this I have seen but a single specimen. It is nearly allied to the preceding, but has occasionally a thin tomentum spread over the leaves in addition to minute glandular hairs. The scales of the involucrum are also pale purple. As a variety, I would distinguish it as β. **erubescens.*

*Gnaphalium luteo-album; β. *occidentale,* a much larger plant than the European species. The lower leaves inclining to be decurrent; capituli also larger.

Hab. Wappatoo Island, and the banks of the Oregon, &c., also in Upper California and Chili, (according to a specimen from Dr. Styles.) It is probably the *G. Vira-vira* of Molini.

*Gnaphalium *palustre;* ⊙, softly, floccosely lanuginous and canescent; stem much branched; leaves oblong, or oblong-linear, acute, subamplexicaule; flowers in somewhat hemispherical, very woolly, bracteolate or foliaceous clusters; scales of the involucrum white or brownish, linear, and rather obtuse.

Hab. Rocky Mountains, Oregon, California and Chili. A very branching plant, allied to *G. uliginosum*, but with broader leaves, and a looser cotton-like tomentum; the involucrum also nearly white, with narrower scales, and nearly all of them tomentose to near their summits. In an advanced state it becomes exceedingly lanuginous and almost like loose flocks of cotton. The receptacle flat and naked; the size exceedingly variable, being from an inch to a span high.

*Gnaphalium *gossypinum;* ⊙, white and floccosely lanuginous; stem nearly simple? erect; radical leaves spathulate-lanceolate, acute, cauline crowded,

linear, acuminate, sessile, narrower towards the base; capituli conglomerate, sessile, terminal; involucrum ovate, the scales yellowish, oval or oval-oblong, obtuse.

Hab. On the shores of the Pacific, at the estuary of the Oregon: rare. It has almost exactly the appearance of *Helichrysum graveolens*, is heavy-scented, and somewhat glandular beneath the copious pubescence. About twelve to eighteen inches high. Leaves one to two inches long, one to two lines wide, acute or acuminate; scales of the capitulum pale yellow. (I have seen but two specimens in a young state: it may, probably, branch at a later period.) It possesses several rows of feminine florets, and is therefore a true Gnaphalium.

*Gnaphalium filaginoides*, (Hooker and Arnot, Bot. Beechy.) A slender, often simple-stemmed species; radical leaves nearly smooth, or smoother, the rest whitely tomentose and apiculate. Stem simple. Flowers in sessile, subterminal clusters; capituli sharply ovate, yellowish, with the floral leaves broader, and more whitely and densely tomentose.

*Gnaphalium * microcephalum;* suffruticose? densely and whitely lanuginous; stem erect, simple; leaves lanceolate, apiculate, sessile, narrower towards the base, nearly all similar; capituli conglomerate, in a short spike, ovate; scales scariose, acute, white.

Hab. St. Diego, Upper California: rare. About a foot high, the stem rather woody beneath the dense white tomentum. Leaves one to one and a half inches long, two to three lines wide, white on both sides, with a blackish apiculate point. Flowering clusters confluent in a short spike or mass about two inches in length, involucrum very floccose at base, white and silvery, hermaphrodite florets about five. Somewhat allied, apparently, to *G. lanuginosum*, but it strongly resembles some of the species from the Cape of Good Hope. (I have seen but a single specimen.)

*Gnaphalium spicatum.*

Hab. St. Barbara, Upper California. The upper surface of the leaves green, but somewhat deciduously tomentose.

*Gnaphalium sylvaticum.*

Hab. In Labrador. (Herb. Schweinitz.) The low form, with dark scales to the involucrum.

*Gnaphalium * ustulatum;* 2, herbaceous, erect; stem simple, terete; the whole plant whitely tomentose; stem somewhat floccosely pubescent; leaves oblong-spathulate, obtuse, mucronulate, the upper ones narrower, sessile, (not decurrent;) capituli oblong, aggregated in the axills of the upper leaves into a dense, continuous, short, oblong spike; scales of the involucrum lanceolate and linear, acute, brownish towards the points.

Hab. On the plains of the Platte, towards the Rocky Mountains, and near St. Barbara in Upper California. Nearly allied to *G. spicatum*, but without the decurrent leaves, which are whitely

tomentose on both surfaces, and the lanuginous tomentum somewhat spreading, or flocculent. From *G. sylvaticum* it may be distinguished by the form of its leaves, and particularly by the scales of the involucrum, which in that species are lanceolate, and oblong obtuse, with the margin in place of the tips brown.—Perfect florets three or four.—It appears to be nearly allied to *G. falcatum* δ? of DECAND., Vol. V., p. 233, which, probably, does not appertain to that species.

*Gnaphalium* * *depressum;* canescently lanuginous, stemless, and caespitose; leaves linear, obtuse, the primary ones smooth; capitulum solitary, sessile, campanulate; scales of the involucrum brown, oblong, acute; achenium villous.

HAB. The summit of the mountain, Pichincha, South America, (Dr. Jamieson.) I introduce this curious alpine plant, on account of its near relation to our section OMALOTHECA. It would readily be overlooked for a stemless individual, of *O. supina*, from which it is only distinguishable by the largeness of the capitulum, which, moreover, contains several rows of female florets, with only four or five hermaphrodite or sterile ones, and is therefore a true *Gnaphalium.*

### §. OMALOTHECA. (Genus of *Decand.* and *Cassini.*)

* HETEROPHANIA.—*Dioicous; the sexes of different forms.*

*Gnaphalium* * *dimorphum;* white and lanuginous, stoloniferous; stem filiform, one-flowered; leaves linear, obtuse; in the female spathulate, in the male narrow-linear and attenuated below; scales of the involucrum in the male lanceolate acute, brownish; in the female very long acuminate!

HAB. On the Black Hills of the Platte. Flowering in the beginning of May. The male plant has a very stout, creeping, almost woody root, sending out thick, lanuginous, short stolons. Stem like a slender leafy peduncle, the leaves about an inch long or more, and about half a line to a line wide. Involucrum rather large, and somewhat campanulate, the scales pale brown; florets about fifteen, infertile, though apparently hermaphrodite, twice as large as in *O. supina;* but for the rest the plants could scarcely be told apart, in the depauperated individuals of the latter.—In the female, the leaves are spathulate, about an inch long, and two or three lines wide! the involucrum is also larger, with very long points to the scales! Notwithstanding all these curious discrepancies our plant is inseparable in genus from *Gnaphalium supinum.* It is not an *Antennaria*, as the threads of the pappus are all slender and equal in the male.

## FILAGO. (Tournefort.)

*Filago* * *Californica;* ⊙, stem erect, branching from the base; leaves spathulate-linear, apiculate, below nearly smooth, the upper ones and the stem arachnoidly tomentose; capituli few, paniculate, in lateral and terminal clusters, sometimes almost in spikes; scales of the involucrum tomentose at base, above

scariose and smooth, sublanceolate, acute.—*β. *tomentosa;* leaves crowded and tomentose, flower clusters approximating in spikes.

Hab. Near St. Barbara, Upper California. Nearly allied to *F. montana*, but with larger capituli, &c., in β. the scales of the involucrum are brownish and purple. A much branched annual, about a span high. External florets, without pappus.

## ANTENNARIA. (R. Brown.)

*Antennaria plantaginea.*

Hab. On the plains of the Platte to the "Black Hills." A one-flowered variety of this species sometimes occurs, as in the *A. monocephala*, of Decandolle, which is also, probably, a similar variety of *A. alpina*. Specimens have been sent to me from Louisiana by Professor Carpenter, and more recently they have been found on the Wishahickon, by Mr. C. Lea, Junior, of Philadelphia. In these specimens the solitary head of both sexes is unusually large, and the leaves very broad.

*Antennaria *parvifolia;* subcæspitose, with procumbent sarments; stem simple; lower leaves spathulate, or spathulate-linear, the upper linear, all whitely tomentose; flowers conglomerate; scales of the involucrum oblong-ovate, eroded, yellow.

Hab. On the Black Hills and plains of the upper part of the Platte. A dwarf species, spreading out in canescent tufts with very small leaves, which are about half or three quarters of an inch long, and about two or three lines wide; the flowers in an irregular, somewhat round mass, not a circular corymb, with the scales of the corymb sulphur yellow, and very conspicuous. Radical leaves somewhat rhomboidally spathulate. The pappus of the male flower is very conspicuously clavellate: the female flower has purple oblong-lanceolate scales to the involucrum, and a filiform pappus. A specimen of this sex from Altai has a near resemblance to our plant, but is larger in all its parts, and is the *A. hyperborea* of Don.

*Antennaria *Labradorica;* canescently tomentose; sarments procumbent, flowering; stem simple; radical leaves spathulate-linear, cauline linear, sessile, at length nearly smooth; capituli pedicellate in a cyme of three to five; scales of the involucrum ustulate and brownish, lanceolate and long acuminate, membranaceous.

Hab. Labrador. (Herb. Schweinitz.) Apparently a very distinct species. At first glance resembling *A. alpina*, but more nearly allied to *A. plantaginea;* it is, however, a much smaller plant, the leaves not three-nerved; the scales of the involucrum brown, and as it were soiled at the tips, which are very much acuminated; the achenium is also perfectly smooth; with the pappus thickened at the base, somewhat scabrous, and yellowish white.

## ARNICA. (Linn.)

Arnica *angustifolia*, Vahl. *A. fulgens*, Pursh, Flor. Bor. Am., Vol. II., p. 527.

Hab. On the plains of the Platte to the Rocky Mountains. Labrador, (Schweinitz!) from which locality it appears to be the *A. plantaginea* of Pursh.

*Arnica * lanceolata;* stem leaves about three pairs, semiamplexicaule, lanceolate or oblong-lanceolate, three-nerved, acute, irregularly dentate-serrate, nearly smooth, with the margin and stem pubescent; capituli about three, pedunculate; involucrum longer than the disk; sepals about twelve to fifteen, lanceolate, acuminate, hirsute and glandular, as well as the peduncle; achenium also hirsute; pappus nearly plumose.

Hab. On the White Mountains of New Hampshire, at the elevation of four thousand five hundred feet, (according to the observation of my friend Charles Pickering.) A very distinct species, allied, apparently, to *A. Chamissonis*. About a foot high, leaves two to three inches long, one to one and a half wide, of a thin consistence, and nearly as large at the summit as at the base of the stem; the lowest leaves somewhat cuneate, sessile. Stigmas much exserted, clavately thickened at the summit, and pubescent below the point; those of the ray long and filiform, much exserted: the ray without any rudiments of stamina, two and three-toothed at the extremity.

*Arnica * foliosa;* pubescent and minutely glandular; stem leaves three to five pairs, lanceolate or oblong-lanceolate, subacute, the radical and lower mostly long petiolate or attenuate, often subserrate; capituli three to five, long pedunculate; involucrum about the length of the disk, the segments linear-lanceolate, subacute and pilose at the tips; rays scarcely longer than the involucrum, without abortive filaments; achenium pubescent.

Hab. On the alluvial flats of the Colorado of the West, particularly near Bear River, of the lake Timpanagos. A species of somewhat variable aspect, allied to *A. angustifolia*, but very distinct; the rays much shorter, narrower, and sulphur yellow. In the slender form the stem is about a foot high, with the radical leaves narrow lanceolate, mostly entire, and attenuated into a long petiole, the two or three upper pairs sessile and semiamplexicaule. In another variety, which I call β. * *andina*, the radical leaves are ovate-lanceolate, and usually subserrate, with a shorter stem, and more numerous flowers; sepals somewhat biserial, about fifteen or sixteen, more or less hirsute, not acuminate; point of the stigma thickened, with a somewhat conic point. This variety appears to be allied to *A. Chamissonis*, but the achenium is less hirsute than in *A. montana*, and the sepals rather obtuse than acuminate, &c.

*Arnica Menziesii*, Hook. Flor. Bor. Am., t. 111.

Hab. In the Rocky Mountains, in the central chain, where it is sometimes diminished in size

to four or five inches in height. There are no infertile filaments in the ray, and the pappus is almost perfectly plumose.

*Arnica *macrophylla;* slightly pubescent; stem about three-flowered, with three pairs of leaves; radical and lower petiolate stem leaves, cordate, acute, the radical often obtuse, irregularly and somewhat incisely dentate, uppermost pair small lanceolate, semiamplexicaule, acuminate; pedicel elongated, bracteate; sepals linear-lanceolate, acute, about twelve, hirsute at the base; rays without filaments.

Hab. In the valleys of the Blue Mountains of Oregon. Stem about twelve to eighteen inches high; the leaves distant from each other, the lowest two to three inches wide, and about the same in length; the petioles longer than the leaves, which with the lower part of the stem are more or less pilose. Rays pale yellow, about twice the length of the involucrum. Discal florets with the dentures hirsutely pilose at the tips. Achenium subcylindric, hirsute; the pappus nearly plumose. Veins of the leaves coarsely reticulated.

*Arnica *amplexicaulis;* nearly smooth; many stems from the same root; leaves five or six pairs, approximate, ovate, acute, amplexicaule, denticulate; capituli three to five, lateral and terminal; sepals about twelve, linear-lanceolate, acuminate; rays without filaments; achenium hirsute.

Hab. On the rocks of the Wahlamet, at the Falls. About a foot high, and very leafy; the leaves nearly all equal, except the uppermost floral pair: lateral branches leafy, one-flowered; rays longer than the involucrum, nearly linear, three-toothed, the teeth small; tips of the involucrum purple. Pappus nearly plumose.

## SENECIO. (Lessing.)

### † *Discoidal species.*

Senecio **debilis;* 2, glabrous; lower leaves upon very long petioles, radical spathulate-oval, obtuse, entire, or incisely toothed at base, cauline few, amplexicaule, pinnatifid; segments oblong, remote, entire or sparingly toothed, the upper ones with a tuft of down at the base; corymb simple or compound; involucrum minutely bracteolate; sepals about twenty, not sphacelate; florets with the teeth glabrous; achenium smooth.

Hab. Plains of the Oregon, near the Wahlamet. Nearly allied to *S. elongatus*, of Pursh. Lower leaves with petioles three or four inches long, the primary ones quite entire and obtuse, at length toothed, and finally pinnatifid, with clasping auricles; umbell usually twice compounded, the umbells with three to five heads, the proper pedicels rather short; florets bright yellow. Lower leaves often greatly resembling those of *Barbarea vulgaris*, the pinnatifid ones remarkable for the remoteness and shortness of their lobes, which are mostly entire.

*Senecio *rapifolius;* smooth; stem nearly erect, angular and striated, leafy; leaves spathulate-obovate, acute, the radical ones petiolate, cauline amplexicaule, the uppermost lanceolate or ovate, all sharply and unequally dentate, the base sometimes runcinate; corymb paniculate; involucrum cylindric, small, about fifteen-flowered; sepals linear-lanceolate, about eight to ten; pedicels bracteolate to their summits; achenium smooth and angularly striated; pappus shorter than the florets.

Hab. Towards the Rocky Mountains, along the upper branches of the Platte. Allied in habit and affinity to *S. cacaliaster*, which is also sometimes without rays. Obs. The root tuberous, stout and perennial. Many stems from the same radical crown, somewhat decumbent, about a foot high, every where quite smooth and shining. The leaves very much like those of *Sonchus oleraceus*, sharply toothed, their outline pretty much that of *Brassica rapa*, inclining to be lobed or incise near the base, four or five inches long, by two or three wide; the lower leaves of the stem with broadly alated petioles; upper part of the stem branching, the branches all corymbiferous; umbellets with three to five or six capituli; the pedicels with several subulate bractes, a few of which also approach the base of the involucrum; sepals membranous on the margin, a little pubescent, but not sphaceolous at the tips.—(In my herbarium this species was first marked by the name of *S. *argutus*, which I have changed for the present, as more applicable.)

## †† *Capituli radiate.*

*Senecio *Andinus;* smooth; stem erect, angular and grooved, very leafy; leaves elongated, linear-lanceolate, acute, sharply serrulate, corymb compound, paniculate; pedicels long, bracteolate, smooth; involucrum turbinate-cylindric, of twelve to fifteen sepals, sphacelate at the tips; bractes beneath the involucrum rather numerous, subulate; flosculi about twenty; rays six to eight, about the length of the involucrum; achenium smooth, pappus as long as the florets.

Hab. In the valleys of the highest of the Rocky Mountains or Northern Andes, at an elevation of about six thousand feet above the level of the sea. Flowering in July. Very nearly allied to *S. sarracenicus*, which extends to the Altaic Mountains. About a foot high, and full of leaves, three to five inches long, by half to three quarters of an inch wide; the corymb often very irregular, made up of many slender, fastigiate flowering branchlets; the flowers small.

*Senecio integerrimus*, (Nutt. Gen. Am. and Decand., Vol. V., p. 432.)

Hab. On the plains of the Platte, towards the Rocky Mountains. My specimens differ somewhat from those of the Missouri, in not affecting wet places; the upper part of the stem in these is occasionally sprinkled with a few soft hairs. The stem twelve to eighteen inches high, nearly terete, and simple; the lower and radical leaves frequently oblong, or oblong-lanceolate, sometimes denticulate, the stem leaves narrow-lanceolate, amplexicaule, acute, or acuminate, diminishing so rapidly upwards as to give the stem much the appearance of a scape. Corymb small and con-

tracted, five to eight or ten-flowered, the pedicels and involucrum bracteolate; sepals linear, acute, about twenty, often with dark purple sphaceolous points. Rays about eight. Pappus shorter than the florets; achenium smooth. Considerably allied to *S. pratensis*, but nearly smooth, also to the *S. papposum*. There is a specimen very similar to our plant from Altai, sent to Dr. Schweinitz, but without any certain name.

*Senecio *megacephalus;* 4, stem low, densely lanuginous at base; leaves deciduously lanuginous, oblong-lanceolate, entire, cauline amplexicaule, linear-lanceolate, acute; corymb of three to five bracteolate, large capituli; involucrum pubescent, of twenty to twenty-four linear, acute sepals, tipped with tufts of hairs; rays pale yellow, ten to twelve, scarcely as long as the involucrum; achenium smooth, with about ten striatures; dentures of the florets papillose.

Hab. On the plains of the Platte, towards the Rocky Mountains. Nearly allied to *S. alpestris*. About six to eight inches high; the leaves perfectly entire, more or less pubescent beneath, lower leaves with long petioles. Capituli very large, for the size of the plant, about as large as those of the common bur, (*Arctium lappa.*)

*Senecio *fastigiatus;* 4, nearly smooth, or somewhat arachnoidly tomentose; stem erect, simple, grooved, the summit compoundly corymbose and fastigiate; leaves lanceolate or linear-lanceolate, entire or distantly serrulate, acute, the radical long petiolate, cauline few, sessile, linear, attenuated below, the uppermost amplexicaule; branches of the corymb two or three-flowered, pedicels elongated, bracteolate; involucrum turbinate, nearly naked, sepals twelve to fifteen; rays oblong, nearly entire, about eight, longer than the involucrum; achenium smooth.

Hab. The plains of Oregon, near the Wahlamet. A tall, rather slender species, two to three or more feet high, with a running root. Lower leaves with their petioles more than a span long, not more than half to three quarters of an inch wide. Leaves of the stem very small and distant, giving the plant a remarkably naked appearance. Sepals yellowish, linear, and acuminate. Rays long, (often twice as long as the involucrum,) few, and bright yellow, linear-oblong, slightly toothed, attenuated below, and sometimes tubular. Tubular florets, about twenty, the teeth ovate, acute, nearly smooth, exserted beyond the pappus. A few irregular slender bractes beneath the involucrum.

*Senecio *exaltatus;* 4, more or less hirsute with white hairs; the radical leaves nearly smooth; stem tall, robust, nearly cylindric and grooved; lower leaves oblong-lanceolate, unequally and glandularly serrate, rather broad and long petiolate; upper leaves small and amplexicaule, incisely, and sometimes deeply serrate; corymb compound, many-flowered, fastigiate; involucrum cam-

panulate, sparingly bracteolate; sepals about fifteen, linear, carinate, not sphacelous; rays oblong, short, six to eight, about the length of the short involucrum; achenium smooth; pappus much shorter than the florets.

Hab. The plains of Oregon, near the outlet of the Wahlamet. A remarkably tall and robust species, from three to five feet high, above nearly naked and without a branch, except the subdivisions of the corymb, which may contain from forty to fifty capituli, all in one fastigiate cluster. Involucrum brownish, short and rigid, the sepals with pubescent tips. Allied to *S. lugens*, but with smaller and more numerous capituli, and fewer rays, the upper stem leaves are also those which are most divided, instead of being entire. The stem and upper leaves are sometimes almost hoary with rough white hairs, never arachnoidly pubescent.

*Senecio *cordatus;* 2, more or less hirsute, particularly the lower part of the stem; stem tall and robust, subcylindric, and angularly grooved; corymb many-flowered, nearly simple; lower leaves cordate-ovate, nearly entire, or repandly serrulate, obtuse, long petiolate; stem leaves lanceolate, amplexicaule, serrate; involucrum campanulate, rather small; sepals linear, carinate, about fifteen, with black, pubescent, sphacelous tips; rays five or six, oblong, about the length of the involucrum; achenium smooth, pappus a little shorter than the florets.

Hab. Alluvial situations in Oregon, near the outlet of the Wahlamet; rather rare. With the preceding: flowering in June. About two and a half to three feet high. The capituli comparatively small, twenty to thirty in a slightly divided corymb; pedicels and base of the involucrum sparingly bracteolate; involucrum smooth. The stem appearing naked from the sudden diminution of the leaves: the radical two to three inches broad, by three to four long, sometimes nearly entire, at other times very regularly crenate. Allied to the preceding, but with a smaller and nearly simple corymb, and the leaves at the base of the stem nearly as broad as long.

*Senecio *hydrophilus;* 2, very smooth and robust, erect; stem cylindric, fistulous and grooved; leaves lanceolate, nearly entire, or repandly denticulate; cauline amplexicaule, acuminate; capituli bracteolate, paniculate; branchlets subfastigiate, the corymbuli contracted, thyrsoid; involucrum small, subcampanulate; sepals about twelve, linear-lanceolate; rays about six, narrow. shorter than the involucrum; achenium smooth; receptacle deeply alveolate, fimbrillate.

Hab. By the margins of ponds and springs in wet places, in the Rocky Mountains, by Ham's Fork of the Colorado of the West. Leaves very smooth and rather thick, very much like those of *Solidago limonifolia.* Stem about two feet high. The root presenting an abrupt crown with circles of thick fibres. Lower leaves narrowed below, with wide sheathing bases, an inch to one and a half inches wide, the petiole six to seven inches long; stem leaves gradually becoming smaller;

the inflorescence six to eight inches long, the lateral branches terminating in thyrsoid clusters; tubular florets twenty to thirty.

*Senecio * Purshianus;* ♃, softly and whitely tomentose, subcæspitose; leaves lanceolate-oblong, entire, cauline amplexicaule, lanceolate, incisely dentate at base; corymb irregular, simple, few-flowered, the pedicels elongated, bracteolate; rays about eight; sepals about twelve, linear-lanceolate; receptacle convex! achenium smooth, pentagonal, ten-striate; pappus as long as the florets. *Cineraria integrifolia*, PURSH, non WILLD. *Senecio integrifolius*, NUTT. Gen. Am., Vol. II., p. 165.

HAB. Rocky Mountains (banks of the Platte,) also the banks of the Missouri. Allied to *L. tomentosus*, but in that, besides other differences, the achenium is hirsutely ribbed. Nearly allied to *S. canus*, but with a different achenium, and stem leaves.

*Senecio submudus;* (DECAND., Vol. VI., p. 428;) ♃, smooth; stem erect, simple, with one capitulum; lower leaves long petiolate, cuneate-spathulate, obtuse, denticulate, cauline sessile, the upper sublanceolate, incisely dentate at base; upper part of the stem scapoid and nearly naked; capitulum subhemispherical, slightly bracteolate; sepals about twenty, acuminate; rays twelve to fifteen, longer than the involucrum; achenium smooth, pappus as long as the florets.

HAB. The Cascade Mountains on the Oregon; (the late Dr. Gairdener, from whom I received the only specimen I possess.) It appears to be somewhat allied to *S. Cymbalaria* of Pursh. Petiole longer than the leaf; the leaf less than an inch long, scarcely a quarter of an inch wide, the uppermost reduced to slender subulate bractes. Stem eight or nine inches high, and in all the specimens I saw with a solitary capitulum.

*Senecio * Cymbalarioides;* ♃, very smooth, except the axills of the leaves, which are arachnoidly floccose; radical leaves cuneate-oval, very long petiolate, serrate; cauline oblong, incisely serrate or subpinnatifid, narrowed below, the base amplexicaule, uppermost leaves very small; corymb simple, four to eight flowered; peduncles elongated, nearly naked; involucrum naked, turbinate, short, of fifteen acuminate, smooth, linear-lanceolate sepals; rays about eight, oblong, longer than the involucrum; achenium smooth, angular, ten-striate; pappus as long as the florets.

HAB. In Oregon. Allied to *S. balsamitæ*, but with the radical leaves shorter, entire at the base, on very long petioles, and with the capituli larger and fewer. Lower leaves about an inch long by three quarters of an inch wide, appearing short, oval, and are mostly cuneate and entire at base; petiole two or three times as long as the leaf; at the very base within, is seen a tuft of loose floccose down; the leaves themselves are exceedingly smooth and lucid.

*Senecio *Schweinitzianus;* 2, smooth, stem grooved; lower and radical leaves long petiolate, cordate, obtuse, or acutely cordate-ovate, coarsely or sharply toothed, incise at base; cauline pinnatifid, auriculate and amplexicaule, the auricle deeply cleft; umbell loose and subcompound; pedicels very long and mostly naked; a few minute bractes under the base of the involucrum; involucrum smooth, the sepals acuminate, about twenty; rays about twelve, longer than the disk; achenium smooth; pappus nearly as long as the florets.

HAB. In Arkansa, and, according to Schweinitz, in Carolina, marked *S. Caroliniana* in his herbarium, but not, apparently, the plant of Sprengel. About a foot and a half high, perfectly smooth, except a slight down, in the axills of the radical leaves. Radical leaves with the petioles four or five inches long, the lamina of the leaf two to three inches long, by one and a half to two broad; umbell compound, with as many as twenty capituli.

*Senecio *Plattensis;* 2, somewhat pubescent; base of the stem arachnoidly tomentose; leaves all pinnatifid, the radical petiolate, cauline amplexicaule, lobes oblong, denticulate, the centre lobe sublanceolate; corymb nearly simple; involucrum subcampanulate, minutely bracteolate; sepals about twenty, acute; rays usually twelve, oblong, a little longer than the short involucrum; achenium puberulous; pappus about the length of the florets.

HAB. In the Rocky Mountain range, and in Arkansa. About ten to fourteen inches high; stem simple, striated. Corymb nearly simple, with ten to twelve heads of flowers, pedicels one to two inches long, slightly bracteolate. The Arkansa specimen is taller and more slender, with the primary small radical leaves entire and smooth, the leaves more elongated, and less denticulate. The whole habit of the plant, as well as the flowers, are very similar to *S. tomentosus*, at least the smoother variety, but the achenium is less pubescent.

*Senecio *coronopus;* ⊙, smooth, dichotomously branched from the base; leaves all pinnatifid, auriculately amplexicaule; the rachis wide, with few acute segments, segments of the upper leaves denticulate; branches few-flowered, fastigiate, pedicels elongated, naked, the summit beneath the campanulate involucrum minutely bracteolate; sepals about twenty, smooth and carinated, with acute, reflected, sphacelous tips; rays about fifteen, oblong, longer than the involucrum; achenium cylindric, ten-ribbed, the ribs strigose; pappus about the length of the florets.

HAB. In Upper California, near St. Barbara. Flowering in May. A very distinct species, allied, though remotely, to *S. Californicus*. The capituli, though fastigiate, are not in a corymb, but terminate the forked branchlets. Flowers bright yellow. Stem much branched, six to eight

inches high, somewhat angular. Nearly allied to *S. coronopifolius:* may it not be a variety of that plant introduced by accident? It is not, however, glaucous.

*Senecio *filifolius;* 2, stem leafy, striated, and, as well as the leaves, arachnoidly tomentose; leaves pseudopinnate, sessile, segments linear, almost filiform, about two pair, the margin revolute; corymb few-flowered; involucrum smooth, minutely bracteolate, subcampanulate; the sepals obtusely carinate, acuminate, about twenty; rays few and revolute; achenium hirsute, pappus copious, as long, or longer than the florets.

Hab. The banks of the Missouri, towards the Rocky Mountains. With much the aspect of some of the species from the Cape of Good Hope. Leaves a good deal like those of *S. abrotanifolius,* but whitely tomentose, and divided into a very few simple segments, about an inch long, and a quarter of a line wide. (I have seen but a single small specimen.)

## CROCIDIUM. (Hooker.)

Capitulum many-flowered, radiate; rays feminine, in a single series, (eight to twelve.) Involucrum in one series, subimbricate, eight to twelve-parted, the divisions ovate, somewhat spreading, at length reflected, the margins of the inner series membranaceous. Receptacle conic, elevated, naked, minutely papillose. Branches of the stigma very short, lanceolate, acuminate, slightly pubescent, not exserted, in the ray very short. Achenium subcylindric, pentagonal, the intervals of the ridges densely squamellose at the summit, appearing almost like an external pappus. Pappus deciduous, barbellate, almost plumose, very white, and little more than the length of the achenium; the radial achenia wholly similar, (not compressed,) but without pappus.—A remarkably distinct genus, approaching more to the Anthemideæ than the present group, but, in fact, a new type, and a stranger in each of the present orders.

Hab. On the shelving rocks of the Oregon, at the confluence of the Wahlamet; common. A very elegant but fugacious annual, six to eight inches high, sending up numerous simple branches from the base, each terminating in a single clear yellow flower. Radical leaves spathulate, incisely indented, the cauline small, linear, acuminate or subulate, sessile; pedicel very long, naked. Axills of the leaves floccosely lanuginous. Involucrum smooth and greenish. Rays oblong, nearly entire, twice as long as the involucrum. All parts of the capitulum, except the persisting involucrum, caducous. Border of the discal florets campanulate, deeply five-cleft, the divisions linear-

lanceolate. Stamens and stigmas not exserted, very short.—This plant appears to have no relation to *Senecio*. The general appearance of the flower is much like that of *Chrysanthemum segetum*.

## TETRADYMIA. (Decand.)

Capitulum homogamous, four-flowered. The involucrum of four biserial, foliaceous, oblong, obtusely carinated sepals, the inner membranaceous on the margins. Receptacle naked and narrow. Corolla tubular, deeply five-cleft, the lobes linear. Branches of the stigma nearly terete, the apex obtuse and hirsute. Achenium turbinate, densely villous with simple hairs. Pappus copious, in many series, the setæ all equal, rather rigid and barbellate.—Canescent, much branching, and sometimes spiny shrubs of the plains of the Rocky Mountains or Northern Andes. Leaves alternate, sessile, fasciculate in the axills, entire and linear. Capituli in terminal fascicles or racemes, pedicellate. Flowers deep yellow.

*Tetradymia canescens*, (Decand.;) leaves mucronate; capituli racemose.

Hab. Oregon; (Douglas.) I have never seen this species, and think it more probable to be a native of California, or the Rocky Mountains. Certainly not along the plains of the north-west coast.

*Tetradymia *inermis;* shrubby, much branched, and canescently tomentose; leaves oblong-linear, slightly acute, somewhat clustered; capituli in terminal clusters of three to five, upon short peduncles, the central ones often sessile.

Hab. On the dry barren plains of the Rocky Mountains; common, particularly near Lewis' River, of the Shoshonee, but not in the plains of Oregon. A much branched shrub, two or three feet high, whitely canescent with a close soft tomentum, which is also spread over the branches; the branches studded with the cicatrices of former buds. Leaves about three-quarters of an inch long, often obtuse, slightly apiculated. Sepals oblong, obtusely carinated, connected at base. Achenium thickly clad with long simple hairs, beneath which it is entirely hid; the pappus very copious and long, at length longer than the florets, becoming pale brown, the setæ rather slender, and all similar; at length growing out to the length of half an inch.

*Tetradymia spinosa;* canescently tomentose, shrubby and much branched; axills spinescent; leaves linear-oblong, obtuse or acute, clustered, at length nearly smooth; capituli in terminal clusters, pedunculate.

Hab. With the above, on the dry plains of Lewis' River, and on Ham's Fork of the Colorado of the West: common. Flowering in July. A very elegant and singular shrub, growing in tufts,

two or three feet high, in the manner of the Furze bush of Europe, (*Ulex.*) Spines half an inch to three-quarters of an inch long, sharp and somewhat curved. From under the flowering clusters come out often tomentose branches, entirely clad with alternate spines, in two rows, in the axills of which are formed buds, which afterwards produce leaves. Capituli on long peduncles; the sepals distinctly carinate, oblong-lanceolate, receptacle entirely naked. The leaves thinly tomentose, almost green. The villous hairs of the achenium shorter than in the preceding; bristles of the pappus slender, and all similar.

## *LAGOTHAMNUS.

TETRADYMIA, but with the capitulum five-flowered, the involucrum subcampanulate, of five (or rarely six) flat, oblong sepals in a single series. Receptacle naked, alveolate, dentate. Branches of the stigma subterete, obtuse, the upper part, as well as the summit, pubescent. Achenium oblong, thickly clad from the base with long, slender, fastigiate, minutely serrulate hairs of the same height with the true pappus, which consists of about twenty stout and rigid barbellated bristles.—A decumbent, canescent, much branched, spiny shrub. Leaves clustered in the axills of preceding slender spines, entire, linear, minute, thick, almost acerose and smooth. Flowers solitary, axillary, terminating small branchlets; the pedicels bracteolate, appearing, from their situation above each other on the branch, to form a raceme; branches and involucrum white and densely tomentose.—(The name alludes to the soft, tomentose clothing of the plant.)

### *Lagothamnus * microphyllus.*

HAB. On the arid plains of the Rocky Mountains, and near Lewis' River, as well as Ham's Fork of the Colorado of the West: common. Flowering in July and August. A much branched, spreading shrub, three or four feet high, with the young shoots, as well as their spines, soft and whitely tomentose. Leaves clustered, oblong-linear, somewhat convex, perfectly smooth at all times, scarcely more than two lines long, by half a line wide. Capituli mostly nodding, numerous; the florets bright yellow and large, deeply cleft, with smooth, linear, acute segments. Cone of anthers exserted, the cusps linear and acute. Stigmas rather small, pubescent below as well as at the summit. Involucrum conic-campanulate, three of the divisions oval obtuse, two other smaller and acute. About twenty of the bristles which immediately surround the floret are about as stout and as much barbellated as in *Tetradymia*. The most singular part of the plant is the pubescence of the achenium, the hairs of which are very slender, and as much serrulated as in the true pappus of Senecio, which they wholly resemble; they appear also nearly all of a length, and come up nearly even with the few bristles of the true pappus.

*Lagothamnus *ambiguus;* with the whole aspect and character of the preceding, but with the divisions of the involucrum all obtuse; the false pappus of the sides of the achenium more copious, and the inner true pappus so slender as to be scarcely distinguishable.

Hab. With the above.

## Appendix to Senecionideæ. Subtribe MELAMPODINEÆ.

### Division II. Millerieæ?

### *PICROTHAMNUS.

Capitulum monoicous, heterogamous, few-flowered; rays feminine, (three to five,) tubular, truncated, two or three-toothed; discal florets masculine, with abortive styles, (five to ten,) globose-ovate, five-toothed, teeth triangular, and, as well as the rays and achenium, copiously clothed with long flaccid hairs, the tube very slender. Receptacle naked, very small. Involucrum hemispherical, imbricate, about five-leaved, the leaves rounded. Style bifid, stigmas terete-cylindric, with a minutely pencillated summit, nearly smooth. Achenium obconic, turbinate, subcylindric, without pappus, sending off, upwards, numerous long, tortuous hairs. Discal florets without any rudiments of fruit.—A low, much-branched, inelegant, spiny shrub, somewhat softly lanuginous. Leaves alternate, twice trifid. With the habit of an *Artemisia;* capituli in short, leafy racemes, the rachis of which, at length, becomes a long spine. Florets pale yellow.—(The name from πικρος, *bitter*, and θαμνος, *a bush;* in allusion to its bitterness.)

*Picrothamnus * desertorum.*

Hab. Rocky Mountain plains, in arid deserts, towards the north sources of the Platte. Root woody, much branched and very long, covered with numerous fibrous vestiges of bark. Stem from four inches to a foot or more, woody and branched from the base; the whole plant hirsute and grayish canescent. Leaves twice trifid, pseudopetiolate, the segments short, oblong, and entire. A plant of very doubtful affinity, allied in some respects to *Clibadium*, and therefore to the division Millerieæ. It is also allied to the Iveæ; but the tube of anthers are united.

## Tribe V. *CYNAREÆ.*

### Subtribe CARDUINEÆ. (Lessing.)

### CARDUUS. (Gærtner.)

§. I. *Leptochæta.—*Rays of the pappus slender and few; anthers bisetose at base, the setæ lacerate.

*Carduus *occidentalis;* 2, dwarf; leaves deeply pinnatifid, above nearly smooth, beneath canescently tomentose, segments subpalmate, ultimate divisions lanceolate, terminating in short spines, and spinosely serrulate; involucrum subglobose, arachnoidly tomentose; divisions lanceolate, erect, terminating in stright spines, the innermost scariose, spineless and acuminate.

Hab. Round St. Barbara. Stem tomentose, six inches to a foot high. Leaves four or five inches long, about three-quarters to one and a quarter inches wide, with a lanceolate outline, softly tomentose beneath, the lower petiolate, cauline amplexicaule at the base, divisions somewhat palmate, in three or four unequal segments, the spines short. Capituli two or three, terminal, subsessile, pale purple; florets very slender, subringent or unequally cleft. Anthers distinctly bisetose and lacerate at base; pappus scanty, more slender than in most European *Cardui;* somewhat scabrous, the whole habit of the plant similar to that of *Circium discolor.* The pubescence of the involucrum quite as remarkable as in the Cob-web Sempervivum, spreading from one scale to another in right lines.

### CIRCIUM. (Tournefort.)

Obs. To the character of this genus I would add, that in all the species which I have examined, indigenous to America and the old world, the anthers are very distinctly caudate at base, with this appendage generally torn or cleft more or less deeply at the extremity. *Erythrolæna* and *Chamæpeuce* are, therefore, mere sections in the present genus, distinguished principally, and almost solely, by habit and the form of the involucrum.

§. II. Eriolepis. (Cass., Decand.)

*Circium * Hookerianum;* arachnoidly tomentose; stem nearly simple; radical leaves deeply sinuately pinnatifid, beneath canescently tomentose, the segments sublanceolate, unequally bifid, spiny at the points, and ciliately spinulose; stem leaves narrow lanceolate, slightly decurrent, rigidly spiny, the summit merely toothed, with the segments bifid and very short; capituli few, axillary and ter-

minal, subsessile; involucrum subglobose, densely and arachnoidly tomentose, the segments lanceolate, terminating in erect rigid spines, the inner series merely acuminate; pappus conspicuously clavellate.

Hab. In Arctic America. (Hooker.) According to the specimen which he transmitted to the herbarium of the late Mr. Schweinitz, now in the Academy of Natural Sciences in Philadelphia, marked as "*Carduus discolor*," it appears to be also the *C. discolor* of the Flor. Bor. Am., Vol. I., p. 302. The specimen seems to be about sixteen inches high, without a branch, with one terminal flower, and three axillary buds: the involucrum would almost be mistaken for that of *C. lanceolatum;* the flowers are apparently pale purple: the stem leaves four to four and a half inches long, and less than three-quarters of an inch wide, excluding the spines, with a slender arachnoid deciduous pubescence above, and a white tomentum beneath; the radical leaves are more than a foot long, the lateral segments two to two and a half inches long, linear-sublanceolate, slenderly ciliate with minute spines. Florets unequally cleft, the segments narrow and glandularly thickened at the extremity, cauda of the anthers deeply lacerate. Pappus plumose, rather short, and barbellated.

*Circium Douglasii.* (Hook.) Obs. This species, which I collected near Fort Vancouver, on the Oregon, is scarcely, if at all distinct from the *C. undulatum.* The flowers are unequally cleft, as usual, the segments linear and acute; cusps of the anthers linear and acuminate; the caudate process deeply lacerate in several threads, the outer row of florets produce almost a simply barbellated, strong, rigid pappus, the inner florets a soft, plumose pappus, with slender clavellate tips. The capituli, when fully developed, are nearly naked and globular. Flower pale purple. The leaves on both sides are white, more so beneath, and very softly pubescent; they very much resemble those of the common Artichoke.

*Circium *stenolepidum;* stem branching, naked above, and, as well as the upper surface of the leaves, somewhat pilose and hirsute; flowers fastigiate, somewhat corymbose; leaves deeply pinnatifid, sublanceolate, beneath tomentose, segments deeply and almost equally bifid, spinosely ciliate and spinose at the points, somewhat decurrent and amplexicaule at base; capitulum nearly naked, slightly arachnoid, tomentose; divisions of the involucrum very long and linear, terminating in short, continuous, erect spines, the inner series much acuminated and unarmed.

Hab. In the plains of Oregon. A tall and stout species, with the leaves somewhat resembling those of *C. discolor.* Capituli large and globular, somewhat clustered or corymbose, the branches fastigiate, sometimes producing two capituli. Flowers purplish, very remarkable for the narrowness and great length of the sepals, which are nearly an inch long, and less than half a line wide,

except the base, the form linear-lanceolate, with very long points, all nearly attaining the same common height. Pappus plumose, as usual, and clavellate; the florets unequally cleft, and the anthers caudate at base.—Nearly allied to *C. remotifolium*.

*Circium *canescens;* 2, dwarf and slender, canescently tomentose; leaves lanceolate, decurrent, pinnatifid, undulated segments oblong, bifid, spinescent, and with spiny serratures; capituli few, (three to five,) conglomerate, sessile; involucrum slightly pubescent, the scales lanceolate, with rigid, erect spines.

Hab. In the arid deserts of the Platte. The root creeping as in *C. arvense*. Stem about eight to ten inches high, and, as well as the leaves, arachnoidly tomentose and canescent. Leaves three or four inches long, about an inch wide, nearly white on both sides, most so beneath, decurrent, with narrow spiny margins. Flowers few; the capitulum somewhat hemispherical, the spines stout and rather broad. Florets pale rose, unequally cleft. Anthers caudate at base, and lacerate. Pappus plumose and slenderly thickened above.

*Circium *edule;* annual or biennial, nearly smooth; stem pubescent, angular and grooved; leaves lanceolate, amplexicaule, moderately pinnatifid, segments obtuse, almost equally two-lobed, spinescent and spinulosely ciliate; capituli terminal, conglomerate, sessile, by three and five together; involucrum subglobose, arachnoidly tomentose, the scales linear-lanceolate, terminating in short, erect spines.

Hab. The plains of Oregon and the Blue Mountains: common. Three to four feet high, robust and somewhat succulent; flowers purple, nearly the size of those of *C. lanceolatum*, growing in lateral and terminal clusters, corolla unequally cleft, anthers caudate, appendage lacerate; cusps of the anthers lanceolate, filaments, as in all the preceding, pilose and hirsute. Pappus plumose. Allied to *C. foliosum*. The young stems, stripped of their bark, are commonly eaten raw by the aborigines, and have a somewhat pleasant and sweetish taste.

*Circium *scariosum;* 2? dwarf and robust; stem and mid-rib of the leaves above and beneath softly and copiously pilose; leaves narrow lanceolate, beneath whitely tomentose, amplexicaule, pinnatifid, segments lanceolate, terminated and ciliated with long spines, uppermost leaves and bractes linear, very spiny; capituli conglomerate, sessile, roundish; involucrum somewhat arachnoidly tomentose, the scales lanceolate and acuminated with rather slender spines, inner scales terminating in scariose, lanceolate, fimbriate, reflected points.

Hab. The plains of the Rocky Mountains. Stem stout, about nine inches or a foot high, leafy: the leaves about half an inch to an inch wide, and four to six inches long, the segments of the stem leaves very short, ending in long spines; capituli three to five; two or three series of inner, scariosely appendaged scales. Corolla unequally cleft, ringent; anthers lacerately caudate; pappus

plumose; achenium smooth and even. The inner divisions of the involucrum, and, in fact, the whole aspect of our plant is very similar to that of *Echenais carlinoides*, which is also a true Circium, without any vestige of generic character, or even habit, to separate it; for, on examining the fruit when mature, I find it smooth and even, without any striatures whatever.

*Circium *megacanthum;* glabrous, robust and gigantic; capituli round, aggregated in clusters towards the summit of the stem; leaves deeply pinnatifid and somewhat decurrent, segments lanceolate or linear-lanceolate, terminating in stout spines nearly their length, the margin ciliate-serrate; capituli bracteolate, involucrate, the bractes and upper leaves exceedingly spiny; scales of the involucrum lanceolate, acuminate, erect, acicularly terminated; pappus very long.

Hab. On the banks of the Mississippi, in the vicinity of New Orleans. Found by Mr. Little and myself. Its measurements, according to Mr. Little, are three to six feet high. Stem two inches in diameter, at base; the largest leaves one foot four inches long: (a specimen from the Bayou Road.) The leaves are sometimes slightly arachnoid along the mid-rib. The larger spines are nearly an inch long, and as stout as coarse sewing needles. The clusters of capituli may be from ten to twenty, about three inches wide, when largest; the sepals terminated with mere acicular points. Pappus plumose, near one and a quarter inches long, white; tube of the floret twice as long as the nearly equal border; anthers caudate, the appendage deeply cleft; cusps acuminate. Resembles at first glance *C. spinosissimum*, but it is much larger, and wholly distinct. The segments of the leaves are long and narrow. One of the most terribly armed plants in the genus.

### §. VI. Onotrophe. (Cassini.)

*Circium *brevifolium;* stem slender, subterete, and, as well as the under surface of the leaves, whitely tomentose; leaves oblong-lanceolate, amplexicaule, sinuately pinnatifid, with shallow, simple, or bifid lobes, ending in spines and spinose serratures; involucrum ovate, naked; scales lanceolate, glutinous, smooth, terminating in small, erect spines.

Hab. In the Rocky Mountain plains. Allied to *C. Virginianum;* but the leaves more divided and far more tomentose, as well as the stem; the capitulum very similar. Stem terminating in two or three capituli. Florets ochroleucous, unequally cleft. Anthers lacerately caudate. Pappus plumose, with slender tips. Leaves about half an inch wide, two to three inches long, nearly smooth, and green above.

## Suborder II. LABIATIFLORÆ. (Decand.)

### Tribe VI. *MUTISIACEÆ.* (Less.)

#### Subtribe II. Lerieæ. (Less.)

### *CURSONIA.

Capitulum heterogamous, radiate; liguli flat, with rudiments of stamina, trifid at the apex, externally tomentose, inner lip obsolete, or none. Discal florets hermaphrodite, tubular, five-toothed, ringent, two of the dentures larger. Anthers in the discal florets caudate, the apex appendiculate. Stigma clavate, undivided, the branches adnate, that of the ray exserted and clavate. Involucrum hemispherical, loosely imbricated, the segments linear-lanceolate, setosely acuminate, and rather rigid. Achenium subcylindric-conic, somewhat sericeous. Pappus bristly and scabrous, in several series, and very unequal, five central bristles much larger and longer.—A small herbaceous plant of Peru, with alternate, lanceolate, denticulate leaves, tomentose beneath. Pedicels elongated, terminal. Capitulum somewhat loosely tomentose. Florets apparently dark red or purple.

*Cursonia * Peruviana.*

With the aspect of a *Chaptalia*, to which genus it is allied. Leaves approximating towards the summit of the branch, about an inch long, and less than half an inch wide, lanceolate, acute, attenuated below into a winged petiole, or properly sessile, repandly denticulate and acute, beneath somewhat whitely tomentose, above slenderly arachnoid; pedicels nearly naked, two to two and a half inches long, with one or two subulate bractes. Sepals about two series, linear-lanceolate, arachnoidly tomentose, nearly all of equal height, acuminated with long, bristly, rather rigid points. Rays few, about a single series, as long as the involucrum, flat, linear and trifid at the apex, of a very dark purple, almost black. Pappus a little shorter than the florets. Discal florets also dark purple; caudal processes of the anthers long and very slender, simple. Receptacle apparently naked.—(Collected in the mountains of Peru by Mr. Curson, with many other interesting plants, after whom this genus is deservedly named.)

## POLYACHYRUS. (Lagasca.)

*Polyachyrus * glandulosus;* summit of the stem and involucrum glandularly pubescent, outer scales acute and much larger than the rest, which are scariose and smooth; pappus of the outer flower shorter on one side; leaves . . . . amplexicaule, the uppermost subulate, glandular and entire; capituli two-flowered.

Hab. In Peru. (Mr. Curson.) The specimen I possess is only a flowering fragment. The lower part of the stem is smooth; the leaves have been deciduous, and being wanting the form is unknown. The flowering cluster is three times as large as that of *P. niveus* (which Mr. Curson also collected in Peru,) the two outer scales lanceolate and acute, glandularly scabrous, the inner smaller scales are tipped with red; a large chaffy scale intervenes between the two flowers of the involucrum. Pappus long and yellowish white, in the outer flower shorter on one side. Achenium pubescent, more so in the floret, with long pappus. Flowers apparently white. Stigmas bearded and truncate at the summit, which is reflected. Corolla and caudate anthers much as in *P. niveus.*

## Suborder III. LIGULIFLORÆ.

### Tribe VIII. *CICHORACEÆ.* (Vaill. Jussieu.)

#### Subtribe III. Hyoserideæ. (Lessing, Decand.)

#### APOGON. (Elliott.) Serinia? (Rafin.)

Obs. Involucrum generally eight-leaved, connivent in the fruit. Liguli about the length of the involucrum.

*Apogon lyratum,* (Nutt.;) smooth and glaucous; cauline leaves dilated at the base, the lower and radical ones runcinate lyrate; pedicels two or three; pappus none; achenium smooth.—*Serinia cespitosa?* Rafinesque, Flor. Lud., p. 149. Probably a dwarf state, as it is not cespitose.

Hab. The plains of Arkansa. Very nearly allied to *A. humilis*, from which it principally differs in its lower lyrate leaves; segments about two pairs, upper leaves elongated linear-lanceolate, the floral pair opposite. Involucrum eight-leaved. In *A. humilis*, the summit of the pedicel, and base of the involucrum is often pubescent.

#### *UROPAPPUS.

(Section Calocalaïs of Calaïs, Decand. in part.)

Capitulum many-flowered. Involucrum ovate, loosely imbricate; sepals sub-lanceolate in two or three series, the outer shorter. Receptacle naked, flat. Florets about equal with the involucrum. Achenium subcylindric, minutely scabrous or muricate, striate, attenuated into a thick rostrum. Pappus of five linear-lanceolate, one-nerved paleæ, cleft at the summit, with a slender, somewhat scabrous awn issuing from the cleft.—Smooth and rather slender annuals of Upper California, with long, linear, attenuated leaves, entire or pinnatifidly laciniate. Pedicels very long, scapiform, one-flowered. Flowers yellow.—(The name alludes to the singular setaceously caudate pappus.)

§. I. CALOCALAÏS, (Decand.)—*Involucrum with the external series shorter and unequal. Fruit in all the florets similar, and with a long rostrum.*

*Uropappus Lindleyi. Calaïs Lindleyi*, DECAND. Prod., Vol. VII., p. 85.

HAB. On the north-west coast of America.

*Uropappus linearifolius. Calaïs linearifolius*, DECAND., Vol. VII., p. 85. Exclude the synonym of *Hymenonema? glaucum* of Hooker, which appertains to the following genus.

HAB. This plant I have met with, both at St. Barbara, and St. Diego, Upper California. OBS. Leaves very long and narrow, linear, the lower often irregularly laciniate, or more or less pinnatifid, with slender segments. Flowers yellow and small. Pedicels six inches to a foot long; the stem frequently branched from the base. Pappus of a silvery whiteness, and very shining, the awn much shorter than the paleæ. Achenium black, ribbed, and transversely striate, but smooth, and with a longish rostrum; the fruit all similar. Sepals from eight to twelve, with four or five other shorter external ones.

*Uropappus *grandiflorus;* leaves (as in the preceding) long and linear, the lower often laciniately pinnatifid, with filiform segments, the upper entire; at first often tomentosely ciliate at base; stem branching, pedicels very long; involucrum of ten to fifteen leaves, the outer shorter; achenium slightly striate or lined, scabrous with minute hairs, and with a very long rostrum.

HAB. With the above, which it wholly resembles, except in the larger capitulum, brown and very slender, scabrous achenium, and the shorter proportion of the bristles of the pappus. Sepals, as in all the other species, lanceolate and acuminate.

§. II. *BRACHYCARPA.—*Achenium somewhat attenuated, scarcely rostrate, transversely rugose; the fruit of the outer series (five or six) hirsute, all deeply striate; the bristles of the pappus as long as the scale.*

*Uropappus *heterocarpus;* stem short and few-flowered, often scapoid; leaves long and linear, at first a little hirsute; longer sepals about eight, three or four shorter.

HAB. St. Diego, Upper California. About half a foot high, with the leaves entire, scarcely a line wide, attenuated at both ends; pedicel long, resembling a scape. Flowers pale yellow and small. Achenium long and cylindric, but not properly rostrate. Paleæ straw colour, the bristles distinctly scabrous, and about the same length.

## *SCORZONELLA.

Capitulum many-flowered. Involucrum ovate, imbricate, the sepals acuminate, the outer, or those of all the series ovate, the margins membranaceous. Receptacle naked, alveolate. Achenium not rostrate, quadrangular, strongly and obtusely ten-ribbed. Pappus paleaceous, five to ten parted, united at base into a rigid cup, the segments short ovate, terminating in very long, slender awns. Style exserted, slender, filiform, the branches of the stigma rather short.—Perennial herbs of Oregon, with fusiform, tuberous roots, and sheathing, slenderly pinnatifid, smooth leaves; pedicels very long, naked and scapoid. Flowers yellow, the liguli longer than the involucrum, the apex five-toothed. (The name alludes to the general aspect of Scorzonera.) Allied, though somewhat remotely, to *Calaïs*, from which they differ wholly in habit and duration, having large, conspicuous flowers, like those of *Scorzonera;* the achenium is also truncate and strongly angular.

*Scorzonella laciniata;* leaves deeply pinnatifid, with entire, narrow segments; sepals all broad ovate, acuminate, in about three series; segments of the pappus ovate, the awn scarcely scabrous. *Hymenonema? laciniatum*, Hook. Flor. Bor. Am., Vol. I., p. 301.

Hab. On the plains of the Oregon, near the outlet of the Wahlamet. Twelve to sixteen inches high; the pedicel often eight inches to a foot long, a little enlarged beneath the involucrum. Stem bearing one to three or more flowers. Segments of the leaves often as slender as threads, and very long. Florets very numerous, nearly as much so as in the common Dandelion, of a bright sulphur yellow; sepals very much acuminated. Achenium light brown, a little scabrous towards the summit. Root tap-shaped, nearly like that of Salsafy.

*Scorzonella *leptosepala;* leaves, as in the preceding, slenderly divided; involucrum with the sepals in two series, the outer about five-leaved, ovate; the inner eight-leaved, lanceolate, acuminate; segments of the pappus oblong-lanceolate, with scabrous awns; achenium wholly smooth.

Hab. With the above, and scarcely distinguishable from it, except by the involucrum.

*Scorzonella glauca. Hymenonema? glaucum*, Hook. Flor. Bor. Am., Vol. I., p. 300. With this plant I am unacquainted.

## KRIGIA. (Schreber.)

*Krigia occidentalis*, (Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 104;) leaves mostly lyrate, with slender segments; scapes glandularly pubescent; sepals five to eight, lanceolate, carinate, somewhat obtuse; setæ of the pappus scarcely the length of the scales.

Hab. Arkansa. Annual, as usual, and so similar to *K. virginica*, that I at first considered it the same; but the specific characters given are constant, and prove it very distinct. In *K. virginica*, the sepals are flat, linear-lanceolate, and acuminate, and the awns of the achenium are several times longer than the scales.

*Krigia dichotoma*, (Nutt.) is nothing more than an advanced state of growth of *K. virginica*.

### Subtribe vi. Scorzonereæ. (Lessing.)

## *STEPHANOMERIA.

Capitulum subcylindric, three or five-flowered. Involucrum three to five-leaved; sepals linear-oblong, imbricate, one-nerved, with a caliculum of a few shortish, unequal scales. Receptacle naked, scrobiculate. Achenium oblong, obtusely five-ribbed or pentangular, transversely rugose, the summit truncated. Pappus of ten to twenty-four thick, closely plumose rays, separate, or connected together at the base by pairs.—Perennial, tuberous-rooted, or annual, herbaceous plants, very much branched, above nearly leafless, the lower leaves linear, or runcinate-pinnatifid. Capituli terminal; the flowers pale rose-red. Nearly allied, both in habit and character, to *Lygodesmia*. but differing in the pappus and achenium.

Stephanomeria *minor;* 4, smooth, and much branched from the base, branches obscurely striate; leaves entire, linear-subulate; achenium subrugulose, with five obtuse, carinated ribs; pappus of twenty to twenty-four rays. *Lygodesmia minor*, Hook. Flor. Bor. Am., Vol. I., p. 295, tab. 103, fig. A.

Hab. On the plains and hills of the Oregon. About a foot high, flowering only at the summit; flowers small, pale rose-red; caliculum of about five, small, ovate scales. Pappus white.

*Stephanomeria *heterophylla;* 4, radical leaves oblong, runcinately toothed or pinnatifid, subhirsute, as well as the lower part of the stem; upper leaves

linear-subulate, minute; stem much branched, erect or flexuous; flowers solitary, terminal; scales of the caliculum lanceolate, acute.

Hab. On the borders of Big Sandy creek, a rivulet of the Colorado of the West. A low species, about a span high, with a large tortuous root; the upper leaves reduced to mere scales. Sepals lanceolate. Stem scarcely striated.

*Stephanomeria *runcinata;* 4, radical, and often the stem leaves runcinate-pinnatifid, more or less pubescent, the lower part of the stem scabrous; upper leaves linear; branches short and somewhat spreading, one-flowered; involucrum six-leaved, six-flowered; sepals linear-oblong; pappus white, of about twenty rays; achenium nearly even.

Hab. With the above, which it nearly resembles, but has larger capituli, shorter branches, and generally more of the runcinate leaves. Flowers, as in the preceding, rose-red. Height about seven or eight inches. Pappus white and rather long. Infertile branches clad to the summit with leaves, which are more deeply runcinate-pinnatifid as they approach the extremity.

† *Annual species, divaricately branched; achenium pentangular, transversely rugose, obscurely ribbed.*

*Stephanomeria *paniculata;* ⊙? smooth and glaucous; stem tall, stout and erect, cylindric and striated, virgately branched; flowering branches short and axillary, somewhat paniculate or virgate; leaves linear, dentate or sagittate at the base; segments of the caliculum or bractes oblong and small; pappus gray, of about fifteen to twenty rays.

Hab. On the Rocky Mountain plains, towards the Colorado. Stem rigid and stout, two or more feet high, virgately branched. Pedicels very short and leafy, axillar. Flowers very small, pink red, and pale. The leaves and involucrum are frequently incrusted with clear drops, of a very bitter resin. Achenium straw-coloured, linear, transversely rugose, and pentangular; the ribs depressed.

*Stephanomeria *exigua;* ⊙, glaucous and smooth; branches divaricate, very slender and numerous; radical leaves runcinate-pinnatifid; the cauline resembling mere scales; flowers lateral and terminal, on long bracteolate branchlets; involucrum three to four-leaved, three to four-flowered; pappus white, of fifteen to eighteen rays.

Hab. With the preceding. With divaricate, and almost capillary branchlets; scales of the caliculum about three, lanceolate, minute. Flowers pale red, and small. Achenium pentangular, with acute angles, and transversely rugose sutures. Minute leaves, often denticulate at the base. Pappus with small intercallary simple hairs.

## *RAFINESQUIA.

Capitulum many-flowered. Involucrum subcylindric-conic, caliculate; sepals equal in length, imbricated in about two series, linear and acuminate. Receptacle naked, puncticulate. Achenia subterete, subulate, scarcely striate, somewhat rugose, terminating in a long, filiform rostrum; the external series pubescent. Pappus plumose, in several series.—An annual, much-branched, tall, smooth herb of Upper California, with the aspect of a *Sonchus*. Leaves amplexicaule, runcinate-lyrate, flowers in loose corymbs; the branches microphyllus; caliculum rather short and spreading, the segments linear-subulate. Flowers small, white, externally dark purple in the centre of the liguli. Allied apparently to *Tragopogon*, but very distinct in habit.—(Dedicated to the memory of an almost insane enthusiast in natural history; sometimes an accurate observer, but whose unfortunate monomania was that of giving innumerable names to all objects of nature, and particularly to plants.)

*Rafinesquia Californica.*

Hab. Near the sea-coast, in the vicinity of St. Diego, Upper California. An annual growing to the height of two or three feet, and nearly erect. Stem terete, and purplish, somewhat divaricately branched, branches fastigiate, tending to a corymb at the summit. Leaves more or less deeply and runcinately pinnatifid, amplexicaule, lanceolate, and acute. Floral branches with minute reflected leaves. Involucrum rather long, at first almost cylindric, but quickly enlarging at the base, so as to become conic in the manner of the Sow Thistle. Sepals twelve to fifteen, all of the same height, but in two series, with membranous margins; the caliculum squarrose and short. Florets very fugacious and small, only opening for a few hours, and but little exserted, toothed at the apex. The outer row of achenia pubescent, with short appressed hairs, all somewhat rugulose, attenuated into a rostrum about one and a half times its length, and slenderly filiform; the crown of pappus copious, and softly plumose, the rays fragile. I have had this plant in cultivation in Philadelphia, but it is now lost.

Subtribe VII. LACTUCEÆ. (Lessing., Decand.)

## PYRRHOPAPPUS. (Decand.)

Obs. Achenium linear-oblong, muriculate, with five broad, appressed ribs, and internally grooved.

*Pyrrhopappus grandiflorus.* *Borkhausia grandiflora*, Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 69. *Pyrrhopappus scaposus*, Decand. Prod., Vol. VII., p. 144. The achenium, seen in a young state, exhibits a short rostrum.

Hab. In the plains of Arkansa, (Dr. Pitcher;) also in Mexico, (Berlandier.)

*Pyrrhopappus Carolinianus.* *β. *maximus;* smooth, leaves for the most part laciniately pinnatifid, acuminate; capitulum very many-flowered.

Hab. In Arkansa. Two to three feet high; the root apparently perennial; the lower leaves a foot long, with divaricate, linear segments. Stipe of the achenium about twice its length. The pappus decidedly simple, not in the least scabrous, seen through an ordinary microscope. Sepals with a lateral, obtuse tooth at the summit, as in the original species. Branches of the stigma short, rather obtuse, and pubescent.

## TARAXACUM. (Haller.)

*Taraxacum *montanum;* very smooth; leaves spathulate-oblong, nearly entire or runcinately toothed; scape smooth, much longer than the leaves; caliculum biserial, short and appressed, the scales ovate, or lanceolate, with broad membranaceous margins; sepals not corniculate, about twelve; achenium spinosely muriculate at the summit, scarcely half the length of the rostrum.

Hab. On the banks of the Platte, in subsaline situations towards the Rocky Mountains, and in the highest valleys of the Colorado of the West. Allied very nearly to *T. obovatum* and *T. collinum*. Perennial. Leaves three or four inches long, half to three-quarters of an inch wide, erect; never pinnatifid, mostly obtuse, the teeth shallow and simple. Base of the stem, in a young state, somewhat pubescent, in the axills only. Scape six to ten inches high, perfectly smooth. Flowers rather small.

## MACRORHYNCHUS. (Lessing.)

Obs. The genus ought probably to be confined to the species with an alated, winged achenium.

Subgenus *Kymapleura.† *Achenia compressed, deeply alated, ten-ribbed, the wings undulated; the exterior series hirsutely pubescent, the interior smooth, with narrow ribs.*

*Macrorhynchus *heterophyllus;* ⊙, more or less hirsute; primary leaves spathulate, the rest pinnatifid, with remote linear segments, the central lobe elon-

† From κυμα, *a wave*, and πλευρα, *a rib*, the achenium having undulated ribs.

gated; stem very short, pedicels naked, scapoid, one-flowered; outer sepals rather shorter than the inner, somewhat smooth.

Hab. The plains of Oregon. An annual, from four or five inches to a foot high. Stem scapoid, hid among the leaves; outer series of sepals slightly pubescent, the inner smooth, both linear-lanceolate. Corolla pale yellow, externally purplish, very fugacious. Outer pubescent achenia larger, purple, the inner straw-yellow, with smooth and shallower ribs. The whole plant nearly resembles *M. pterocarpus*, for which it might readily be mistaken.

## *CRYPTOPLEURA.

Capitulum many-flowered. Involucrum subcampanulate, imbricate in a few series, the external shorter, pubescent and caliculiform. Receptacle naked. Liguli elongated. Achenium smooth, linear-oblong, compressed, obtuse. terminated by a very long filiform rostrum, the inner series bearing ten narrow, alated ribs; the outer series inflated, truncated at the apex, marked with obsolete lines; basilar areola minute. Pappus very slender, white and scabrous.—Annuals, with the whole habit of the preceding genus. Stem scapoid, scarcely any; florets yellow, conspicuous, as in *Troximon*.—(The name from κρυπτως, *hidden*, and πλευρα, *a rib*, the ribs of the radial achenia being obsolete or hidden.)

### *Cryptopleura Californica.*

Hab. Near St. Barbara, in Upper California. A dwarf annual, about three to four inches high; hirsute and nearly scapoid. Leaves linear-lanceolate, incisely serrate. Involucrum in about three series, the outer resembling a caliculum, with the divisions ovate and acute, hirsute; the two inner series nearly equal in length, lanceolate, almost smooth. Rays five-toothed, exserted. Pappus softly pilose, white, very slender and scarcely hirsute; the stipe twice as long as the achenium; all the achenia abrupt at the summit, straw white; those of the exterior series truncated at the summit and inflated, so that the seed is seen free in the testa: these are without striatures, and almost without lines. The inner achenia are compressed, and have ten narrow sharply winged ribs.

## *STYLOPAPPUS.

Capitulum many-flowered. Involucrum hemispherical or subcampanulate, of several series of nearly equal leaflets, calyculate; caliculum foliaceous, spreading, of several series, mostly resembling the true leaves. Liguli elongated. Branches of the stigma short, nearly smooth, and slenderly filiform. Re-

ceptacle naked. Achenia smooth, linear-lanceolate, somewhat compressed, sharply ten-ribbed; the outer series abortive, tabescent; the apex attenuated into a filiform rostrum about twice its length, the base with a callous cicatrice. Pappus short and white, of slender subscabrous hairs.—Perennials with long tap-roots and laciniated, incise or pinnatifid leaves. Stems scapoid, naked or bracteolate; the involucrum large, subtended at base by numerous large, and usually dissimilar bractes. Flowers yellow. Nearly allied to *Macrorhynchus*, but of a different habit, with conspicuous flowers; an abortive, external series, an involucrum of many leaves, and an achenium merely ribbed.—(The name alludes to the long stipe of the pappus.)

§. I. *Caliculum of many series, wholly leafy, dissimilar to the involucrum, which is hemispherical.*

*Stylopappus * grandiflorus;* nearly smooth, except the base of the stem, which is lanuginous; leaves lyrately pinnatifid, the terminal segment large and oblong-lanceolate; scape robust and grooved, bracteolate; involucrum hemispherical; caliculum squarrose, of many series of ovate, pubescent, toothed leaves; sepals linear-sublanceolate and smooth.

Hab. High plains of the Wahlamet. A very stout species, the capitulum larger than that of the Dandelion, containing very many flowers. Scape twelve to fourteen inches high, nearly as thick as a goose-quill, grooved. Leaves eight or nine inches long, very irregularly divided, attenuated into long petioles. The flower not seen. An external row of abortive achenia, nearly without striatures, and smooth; fertile achenium linear-lanceolate, narrow and acutely ten-ribbed, pale brown, the filiform stipe more than twice its length. Leaves often pubescent beneath, the inner surface of the broad leaves of the caliculum tomentose.

§. II. *Involucrum campanulate; divisions of the involucrum similar, the outer leafy and somewhat squarrose.*—Troximeria.

*Stylopappus * laciniatus;* smooth or pubescent; leaves very irregularly and often deeply pinnatifid, the segments long and linear; scape naked, smooth; involucrum campanulate; leaves of the caliculum lanceolate, somewhat squarrose; stipe more than twice the length of the achenium, slenderly filiform. *β.* * *longifolius;* more pubescent, leaves very long and deeply divided; the caliculum leaf-like, longer than the involucrum, spreading, sometimes proliferous into true leaves.

Hab. Plains of the Wahlamet, near its estuary. With the habit of a Troximon. Flowers pale yellow. Scape six inches to a foot high. Sepals linear-lanceolate, smooth, the outer two series, for the most part, slightly pubescent. In β. the leaves are twelve to fourteen inches long, the scape two feet, with the involucel or caliculum squarrose, and sometimes several inches long.

*Stylopappus * elatus;* smooth, the base of the scape pilose; leaves very irregularly and deeply pinnatifid, the segments long and linear; involucrum widely campanulate; leaves of the caliculum lanceolate, the lower series hirsute; stipe rather thick, a little more than the length of the elongated achenium.

Hab. With the above, which it closely resembles, but appears to be a larger plant, the scape from twelve to fourteen inches high; but the principal distinction is in the achenium, which is twice as large, with a much thicker stipe. The outer series of tabescent achenia are also pubescent, and there appears, likewise, to be another inner, abortive, smooth series. Flowers almost exactly like those of *Troximon glaucum.*

## TROXIMON. (Nutt. Gen. Am., non Gærtner.)

Capitulum many-flowered. Involucrum imbricate, subcampanulate, divisions lanceolate, distinct, or united at base. Receptacle naked, punctate. Achenium subterete, with ten obtuse ribs, attenuated above into a somewhat similarly striated, and rather short, thick rostrum. Pappus copious, setaceous, persistent, widest at base, longer than the achenium, and scarcely scabrous. —Stemless perennials, with fusiform roots, and mostly entire, linear, smooth, sublanceolate leaves. Scapes terete, exserted, one-flowered; flowers yellow or rose-coloured. Obs. The only species of this genus known to Gærtner, *T. lanatum*, is now referred to *Scorzonera*, the name thus unoccupied may, therefore, still be retained for the American species.

### † *Achenium terete, shortly rostrate, with obtuse ribs.*

*Troximon glaucum.* The involucrum is usually smooth, the divisions in about three series, the outer shorter, all of them lanceolate and acute.

Hab. On the plains of the Platte, and Missouri, about the Great Bend.

*Troximon marginatum.* The scape taller than in the preceding. Divisions of the involucrum in about two series, with the outer broader and as long as the inner, all of them linear-lanceolate. Achenium subcylindric, somewhat narrower at the summit, pale straw-colour, with ten obtuse ribs, the basal cica-

trice minute, not a calosity. Pappus white and shining, coarse and rather bristly, scarcely in the least scabrous, thicker at the base, longer than the achenium.

Hab. With the above, to the Rocky Mountains.

*Troximon *pumilum;* leaves lanceolate or oblong-lanceolate, scarcely acute; scape but little longer than the leaves; involucrum campanulate; sepals numerous, in three or four nearly equal series, ovate-lanceolate, acute, pubescent, the inner linear, all divided to the base.

Hab. Plains of the Rocky Mountains, in Oregon. The only specimen I have seen is about four and a half inches high, the scape about an inch longer than the almost obtuse, smooth, and glaucous leaves. The sepals are unusually numerous, and nearly all of a length, the outer a little shorter. Allied to *T. glaucum*, but with the habit and leaves of *T. aurantiacum;* the involucrum wholly different from either.

*Troximon *taraxacifolium;* subhirsute; leaves lanceolate or oval-lanceolate, scarcely acute, incisely and runcinately dentate at base; involucrum of about two series of leaflets, the inner linear; achenium rostrately attenuated, the ribs shallow and slender.

Hab. Plains of the Wahlamet. But I have only seen it after flowering. A very distinct species, from the broadness of the leaves, which are one and a quarter inches wide, by about six inches long, attenuated at base, and most pubescent on the mid-rib. Scape rather short. Pappus very long and coarse, minutely scabrous.

†† *Achenium compressed, with ten shallow, acute ribs, and attenuated into a distinct rostrum, shorter than the long and bristly pappus. Involucrum ovate, in about three series of unequal, lanceolate sepals.*

*Troximon *parviflorum;* leaves linear-lanceolate, acuminate, smooth or pubescent, often runcinately denticulate towards the base; scape pubescent at the summit, lanuginous; sepals nearly smooth, in three unequal series, lanceolate, acuminate; flowers yellow.

Hab. On the plains of the Platte to the Rocky Mountains. About four or five inches high. The leaves about two lines wide, acuminated at each end. Pappus minutely scabrous; the outermost divisions of the involucrum only about half the length of the inner.

*Troximon *roseum;* leaves narrow lanceolate, runcinately pinnatifid, acuminate, the segments or teeth linear and acuminate; scape elongated, smooth, except the summit, which is lanuginous; sepals in about three unequal series, lanceolate, acuminate; flowers rose-colour.

Hab. With the above, which it wholly resembles, except the leaves, and red flowers; four to six inches high. Leaves three or four inches long, half to three-quarters of an inch wide, with narrow, curving, and mostly runcinate teeth or segments. Achenium distinctly rostrate, rather flat, with shallow, acute ribs, nearly as long as the coarse, white and bristly, scarcely scabrous pappus.

## *MALACOMERIS.

Capitulum many-flowered. Involucrum widely campanulate, loosely imbricate in about two nearly equal series, irregularly bracteolate or caliculate at the base; the segments smooth, linear, nerveless, and membranaceous on the margin. Receptacle naked. Anthers bisetose at base. Achenium oblong, erostrate, truncate, somewhat pentagonal, with about fifteen very slender striæ. Pappus white, in several series, slenderly pilose, deciduous, long, and somewhat barbellated towards the base.—A suffruticose, softly tomentose, and canescent plant of Upper California. Leaves pinnatifid with few linear segments; stem short, above scapoid, one to three-flowered; flowers rather large and yellow. (The name is given in allusion to the soft pubescence.)

*Malacomeris *incanus.*

Hab. St. Diego, on an island in the bay. Suffruticose and decumbent, base of the branches woody. Radical leaves in tufts, whitely and softly tomentose; primary leaves smoother, all more or less pinnatifid and linear, with very few segments, the summit trifid; scape or stem rising two or three inches above the leaves, one to three-flowered, towards the summit becoming smoother, with numerous, smooth, ovate bractes, six or eight of which form a sort of caliculum. Involucrum smooth, the segments numerous, linear and partly acute, all of them of equal height. Florets very numerous and exserted, pubescent on the tube. Stigmas nearly smooth, slender, and but little exserted. Pappus three or four times longer than the short, smooth achenium. The fruit somewhat like that of *Hieracium*, but not ribbed, and the involucrum and habit of the plant that of *Troximon*.

## BARKHAUSIA. (Mœnch.)

*Barkhausia elegans. Crepis elegans*, Hooker, Flor. Bor. Am., Vol. I., p. 297. Scarcely distinct from *B. nana*, which appears like a dwarf growth of this species.

## *CREPIDIUM.

Capitulum many-flowered. Involucrum double, the inner of a single series of leaflets, (about twelve,) the outer short and caliculiform. Receptacle naked. Achenia linear-oblong, subpentangular, erostrate, truncate at the summit,

marked with ten somewhat elevated ribs. Pappus pilose, white and slender, in two or three series, slightly barbellate, about the length of the achenium. —Perennials, with the habit of *Hieracium*, as well as that of *Crepis*. Leaves runcinately toothed, scapoid stems corymbose, branching. Flowers yellow. —(The name alludes to the affinity with *Crepis*.)

Crepidium **runcinatum;* smooth; leaves oblong-lanceolate, runcinately and incisely toothed, acute; scape branching, corymbose, few-flowered; involucrum pubescent, the segments acuminate. *Crepis biennis*, Hooker, (according to a specimen from the author,) not of Linnæus. It differs from the present, however, in having somewhat hirsute leaves, and less deeply toothed.

Hab. On the grassy plains of the Platte, in subsaline soils. Scape about a foot high, with seven to nine capituli, and a linear bracte at the base of each pedicel, as well as at the base of the bifurcation of the stem. Leaves much like those of the Dandelion, but less divided, green, and somewhat fleshy. Involucel about eight-leaved.

*Crepidium* **glaucum;* smooth and glaucous; leaves spathulate-lanceolate or obovate, runcinately and incisely toothed, acute, attenuated below, but rather broad to the base; scape smooth, divaricately branched, with minute bractes; capituli small; involucrum smooth, the segments linear and somewhat obtuse.

Hab. With the above, but less common; every where very smooth, the leaves much larger than in the preceding, half a foot long, and one to one and a half inches wide, sometimes nearly entire, rather thick and succulent. The scape twice forked, or more; about three flowers together at the summits of the branches, not half the size of those of the preceding. Scape eighteen inches to two feet high, terete and almost entirely naked, all the bractes being minute and subulate. Involucrum of about twelve linear leaves; involucel minute, of about eight lanceolate leaflets. Style and stigmas very long and filiform, slightly pubescent.

*Crepidium* **caulescens;* very smooth, but not glaucous; leaves spathulate-lanceolate or oval-lanceolate, runcinately incise toothed and acute; stem scapoid, naked, dichotomously branched, with a conspicuous toothed leaf at the base of the first division; involucrum smooth, the segments lanceolate-oblong.

Hab. With the above, of which I, at first, took it for a mere variety; but the presence of a true stem, though short, and the form of the sepals, distinguish it.

## CREPIS. (Mœnch, Decand.)

§. *Leptotheca.—Involucrum cylindric, leaflets linear in a single series, (five to eight;) involucel of three to five minute bractes; florets five to eight. Achenium attenuated into a short, indistinct rostrum, similar with itself.—Peren-

nial. Stems scapoid, dichotomous, corymbose. Leaves runcinately pinnatifid; stem leaves linear, entire.—In habit allied to *Prenanthes*.

*Crepis * acuminata;* 2, stem smooth, above angular and paniculate; branches corymbose, naked, many-flowered; leaves runcinately pinnatifid, acuminate, pubescent; segments sublanceolate, sparingly laciniate, below attenuated into a petiole; upper stem leaves linear, entire; involucrum smooth; involucel appressed, pubescent.

Hab. Plains of the Platte. About a foot high. Root long, black, and fusiform. Radical leaves about six inches long, with a lanceolate outline, one and a half to two inches wide in the middle, more or less pubescent on both surfaces. Flowers numerous and showy, bright yellow, with exserted five-toothed liguli. Style and stigma exserted and hirsute. Receptacle scrobiculate. Pappus copious, white and soft, a little barbellated. Central achenia longest, all ten striate, the rostrum short and thick. *C. elegans* approaches this species in the involucrum, which is quite similar; but the achenium is furnished with a long slender rostrum, which places it, artificially enough, in the genus Barkhausia. It has also all the habit, as well as great affinity with *Barkhausia tenuifolia* of Siberia.

## * PSILOCHENIA.

Crepis, but with the achenium cylindric, curved, narrower above, and without any visible striæ, the testa indurated, and, when mature, black; an abortive outer series of florets, with the achenium empty. Pappus copious, slenderly pilose, scabrous, and yellowish white, about the length of the achenium. Receptacle naked, alveolate, the alveoles minutely fringed.—A low perennial herb; stem dichotomous and corymbose. Leaves lanceolate, runcinately pinnatifid, and, as well as the somewhat hirsute involucrum, cinereously and closely lanuginous; flowers yellow, rather large.

*Psilochenia * occidentalis. Crepis occidentalis*, Nutt. in Journ. Acad. Nat. Sci. Philad., Vol. VII., p. 29.

Hab. On the plains of the Platte, towards the Rocky Mountains. The whole plant more or less canescently pubescent. Stem about six or seven inches high, forked and corymbose at the summit. Leaves about an inch wide, four or five inches long, deeply and runcinately pinnatifid, the segments linear-lanceolate and denticulate, uppermost leaves linear. Involucrum campanulate: sepals about twelve to fifteen in a single series, linear and somewhat acute; involucel or bractes four or five, small and subulate: there are blackish hairs mixed with the hoary pubescence of the sepals. Florets about twelve, yellow, exserted.

## SONCHUS. (Cassini, Decand.)

*Sonchus fallax? β. *Californicus.*

Hab. In Upper California, around St. Diego. Dentures of the leaves, which are pinnatifid, deep and pungently spinulose; achenium smooth and even, elliptic, *alated*, puberulous on the margin. Probably a distinct species, though so similar to the present as not to be distinguishable, except by the pungency and length of the marginal spines, and the alated achenia.

*Sonchus *tenuifolius;* ⊙, smooth; leaves bipinnatifid and pinnatifid, auriculate at the base; segments few, linear-lanceolate, spinulosely serrulate, the upper simply pinnatifid, with linear, subulate segments; involucrum caliculate, smooth; achenium substriate, transversely rugose.

Hab. In Upper California, round St. Diego, in shady ravines, among rocks. A very distinct species. Primary divisions of the leaves, when bipinnatifid, with a single pair of segments, central or terminal segments usually elongated and acuminate; divisions of the lower leaves obtuse. Involucrum scarcely tumid. Stem slender, about two feet high. Leaves three or four inches long, of a very thin consistence, as in *S. tenerrimus.*

### Subtribe *Andryaleæ.

Receptacle naked or fimbriliferous, sometimes with the margin paleaceous.

Pappus white, usually double, the inner deciduous, filiform, barbellate towards the base, where it adheres in a circle, the outer a minute paleaceous crown. Achenium erostrate, striate, angular or cylindric.

Andryala *Ragusina, A. varia, A. sinuata, A. integrifolia,* and probably other species. In these, except the first, the outer pappus is obscure, and the salient summits of the ribs of the achenium resemble the outer pappus: these, with a very deciduous and much less barbellated pappus, &c., ought to be restored to the genus Voightia, of Roth.

### *LEPTOSERIS.

Capitulum many-flowered, (forty, or more.) Involucrum campanulate, caliculate; sepals distinct to the base, linear-lanceolate, in a single equal series, the margin membranaceous; caliculum small, of about eight unequal bractes. Receptacle naked. Achenium finely striate, somewhat attenuated above,

and partly quadrangular. Pappus double, the outer a very minute paleaceous crown; the inner in a single series, white, pilose and soft, slenderly bearded towards the base, and connected together in a circle, which is quickly deciduous in the mass.—An elegant, smooth, dwarf annual, from the plains of the Platte, with several scapoid, somewhat corymbiferous stems. Leaves nearly all radical, pinnatifid, or runcinate, with the segments short and spinulosely denticulate, in the manner of the Sow Thistle. Flowers yellow and conspicuous.

*Leptoseris * Sonchoides.* ⊙.

Hab. The plains of the Platte. Flowering in June. Four or five inches high, with a slender, simple, whitish tap-root. Leaves about two inches long and half an inch wide, resembling those of a diminutive Sow-thistle, the lateral segments short, oblong and acute; stems three or four, rather naked, branching from below, or only from above, producing an imperfect corymb of three to four capituli. Sepals about twelve to fifteen, one-nerved, pale green, with broad whitish margins; caliculum similar, but very short; the scales ovate. The florets minutely toothed, bright yellow, exserted, about the length of the involucrum. Stem leaves small and few. Stigmas filiform, exserted and nearly smooth. Achenium pale straw-yellow, linear, much resembling the fruit of a *Crepis*, but angular, though less so in the centre of the capitulum. Pappus deciduous, like that of the Thistle, in a sort of ring, or rather circle of adherence, there being no true annular receptacle. Flowers at first nodding. This curious plant appears almost intermediate with *Sonchus* and *Crepis*, but with the former it only agrees in habit.

## *LEUCOSERIS.

Capitulum many-flowered. Involucrum broadly campanulate, involucellate; sepals distinct to the base, imbricated in one or two series, subequal, linear, acute, membranaceous on the margin; involucel in two or three series, subsquarrose, shorter than the involucrum. Receptacle convex, naked. Florets deeply five-cleft at the summit, the tube hirsute. Anthers bisetose at base. Achenium short, unequally pentangular, truncate, five-ribbed, the sides with one or two intermediate striæ in each; the basal cicatrice four-lobed. Pappus double, the outer a very minute paleaceous crown; the inner in a single series, white, pilose and soft, slenderly bearded towards the base,

and connected together in a circle, which is quickly deciduous in the mass. —Perennial plants of Upper California, with erect, or low, decumbent, spreading stems. Leaves entire, laciniated, or pinnatifid. Branches leafy, one or two-flowered; flowers large and white. Allied to *Leptoseris*, but with a widely different aspect, and much more compound capitulum, &c. Also to *Andryala varia* in the pappus, and in the presence of an outer, paleaceous, minute crown; but wholly distinct in habit, pubescence, colour of the flower and achenium, which last, in *Andryala*, is cylindric and ten-ribbed; the whole, however, form a very natural group, with its usual gradations of form.—(The name is given in allusion to the remarkable colour of the flowers.)

*Leucoseris *saxatilis;* stem leafy and decumbent; leaves oblong or linear-oblong, amplexicaule and auriculate; the radical lanceolate, subserrate, beneath hirsute; lower leaves now and then irregularly cleft, or somewhat pinnatifid towards the base; flowers large and white.

Hab. St. Barbara, on shelving rocks near the sea. Flowering in April. A large spreading perennial, with terete, hollow stems, spreading out in a circle of one and a half to two feet. The leaves are rather thick and somewhat succulent, two to three inches long, by about half an inch wide; the young shoots pubescent. Flowers fastigiate, pure white, as large as those of the Dandelion. Florets one hundred, or more, in a capitulum, ligulate, flat, deeply cleft at the summit, the segments obtuse and glandular, the tube very hairy. Style and stigmas slenderly filiform, exserted, nearly smooth: pedicel enlarging towards the base of the capitulum. Involucrum smooth, of many equal, linear segments, in about two series; caliculum somewhat squarrose, imbricated in two or three series, the segments lanceolate, acuminate. Receptacle wide and convex, merely punctate. Achenium dark brown, very short, obtuse at each end; the pappus pure white and silky, about three times the length of the fruit, softly barbellated towards, and at the base, collected into a single series of about thirty rays.

*Leucoseris *tenuifolia;* suffruticose and smooth, erect and branching; leaves sessile, laciniately pinnatifid, segments narrow, long and linear, upper ones entire, filiform; capituli few, corymbose.

Hab. St. Barbara, on the mountains near the town. The expanded flower and fruit I have not seen, and I only place this plant here by its approximating habit. Two or three feet high, having a considerable woody base. Involucrum and involucellum as in the preceding, but the segments narrower and more acuminate.

*Leucoseris? Californicus. Hieracium? Californicum*, DECAND., Vol. VII., p. 235. From the remark that "the pappus is *white*, fragile, and in a *single* series," I conjecture this may be a species of the present genus. The author also imagines that it may belong to a new genus. The flowers have probably been white, as he says they are purplish beneath.—Collected in Upper California by Mr. Douglas. It is described as smooth, with the stem erect, striated, the summit paniculate, the branches bracteolate and monocephalous; the leaves sessile, sublanceolate-linear, acuminate, entire; the scales of the involucrum linear and imbricated. The mature fruit was not seen.

OBS. This genus, nearly allied to *Andryala*, is distinguished by the free leaves of the involucrum, which are not at all ingrafted; by the presence of a copious, imbricated involucellum; a convex receptacle, wholly naked; a pentangular achenium, white flowers, and a pubescence which is not stellated or glandular. On the other hand, the mode of growth is similar, the form of the involucrum, as well as the singular character of the pappus, and general form and striatures of the fruit. Under *A. Cheiranthifolia*, L'HERITIER has well described the pappus of that species as pilose and *pubescent* at the base: the rays are about eighteen.

## Subtribe VIII. HIERACIEÆ. (Lessing.)

## MULGEDIUM. (Cassini.)

† *Flowers blue, the substance of the achenium attenuated into a long point.*

*Mulgedium pulchellum. Sonchus pulchellus*, PURSH. *Lactuca integrifolia*, NUTT. Gen. Am., Vol. II., p. 124. *Lactuca pulchella*, DECAND., Vol. VII., p. 134.

*Mulgedium * heterophyllum;* leaves linear-lanceolate or oblong-lanceolate, the lower ones often runcinately pinnatifid or toothed towards the base: panicle divaricate, squamose; involucrum conic-ovate. the segments lanceolate in three or four series, and very unequal; flowers blue; achenium with a distinct rostrum, of the same substance with the striated achenium. *Sonchus Sibiricus.* HOOKER, Flor. Bor. Am., Vol. I., p. 293, not of Linn.

HAB. Lake Huron, and Canada, to latitude 66°. (HOOKER.) On the Rocky Mountain plains, and the banks of the Oregon, in the interior. Entirely unlike *M. Sibiricum*, which is annual;

ours a stout perennial, with large deeply penetrating roots; very smooth and sometimes glaucous; the panicle spreading, not racemose. Flowers as large and showy as those of *Cichorium Intybus*. Nearly allied to the preceding, which, however, appears to have different leaves, but with the fruit very similar.

### † † *Flowers blue or white; achenium shortly acuminate.*

*Mulgedium acuminatum.* *Sonchus acuminatus*, WILLD. Achenium pale and spotted, with a tumid margin and two or three striæ on either side.

*Mulgedium* * *divaricatum;* branch leaves sessile, somewhat runcinately pinnatifid with wide and shallow denticulated segments; panicle divaricate, naked; involucrum subcampanulate, caliculate; achenium with a short, conformable rostrum, transversely rugulose, with about three elevated central striæ on either side; pappus white.

HAB. Louisiana. (Mr. Trudeau.) The flower appears to have been blue or white; segments of the caliculum lanceolate. Bractes of the very divaricate panicle minute, distant, and subulate. Apparently a very distinct and genuine species of the present genus.

§. LEUCOMELA.—*With the pappus gray; florets nearly half way tubular; anthers bisetose at the base. Achenium transversely rugose, merely attenuated at the summit, with three ribs on one side and four or five on the other; flowers white, with a tinge of purple.*

*Mulgedium leucophæum*, DECAND., Vol. VII., p. 250.

## *GALATHENIUM.

(*Lactuca* and *Mulgedium* species of authors.)

MULGEDIUM, but with the achenium elliptic and flatly compressed, transversely rugulose, with a broad and thin opaque margin, the centre on either side marked with one to three slender striæ; the rostrum distinct, abrupt, shorter than the achenium, ending in a circular disk with a pubescent margin. Pappus white, slender and slightly scabrous, in several series.—North American plants, usually perennial, with the habit of Lactuca or Sonchus; the flowers yellow or blue; the achenium black.—(The name from *γαλαθηνος*, *milky*, in allusion to the milky properties of the plants, and also their alliance with *Lactuca*.)

† *Flowers blue, or bluish-white.*

*Galathenium macrophyllum.* *Sonchus macrophyllus*, WILLD. *Mulgedium macrophyllum*, DECAND., Vol. VII., p. 248.

*Galathenium multiflorum.* *Mulgedium multiflorum*, DECAND.. Vol. VII., p. 249. Perhaps too nearly allied to the following.

*Galathenium Floridanum.* *Sonchus Floridanus*, LINN. *Mulgedium Floridanum*, DECAND., ib., p. 249. Achenium scarcely striated.

*Galathenium *salicifolium;* 4, very smooth; stem simple and terete; leaves entire, lanceolate or linear-lanceolate, much acuminate, sessile, lower ones repandly dentate; panicle contracted, racemose, bracteate; achenium elliptic, acute, with a single nerve on either side, the stipe nearly the length of the fruit.

HAB. In West Florida. (Mr. Ware.) Bethlehem, Pennsylvania and Salem, North Carolina. (Herb. Schweinitz.) The flower appears to have been pale blue or white. Leaves three to four inches long, by half an inch wide, entire, or now and then with a slight denticulation, but nothing down to the root like dentation or division of any kind, (in the three perfect specimens before me.) Uppermost leaves diminishing to bractes with long filiform acuminations. Flowers crowded, on short bracteolate pedicels in the Florida specimen, the flowers racemose, and rather distant.

*Galathenium graminifolium.* *Lactuca graminifolia*, MICH., Flor. Bor. Am., Vol. II., p. 85. Stem leaves entire, sagittate at base. Achenium elliptic-lanceolate, dark brown, with one striature on a side only, the stipe nearly as long as the fruit. Panicle divaricate, naked and dichotomous. Radical and lower stem leaves more or less runcinate.

† † *Flowers yellow.*

*Galathenium elongatum.* *Lactuca elongata*, MUHL. in WILLD., Vol. III., p. 1525. Achenium brown, one-nerved in the centre, the rostrum shorter than the fruit.

*Galathenium integrifolium.* *Lactuca integrifolia*, BIGEL. Flor. Bost. *Lactuca sagittifolia*, ELLIOTT, Sketch, Vol. II., p. 253. Leaves sometimes denticulate; achenium black, with a distinct, pale coloured rostrum two-thirds of its length, with only a single striature on a side.

*Galathenium sanguineum. Lactuca sanguinea*, Bigel. Flor. Bost., (ed. 2,) p. 287. Leaves very often nearly all entire, or only runcinately toothed; achenium one-nerved, black.

*Galathenium ludovicianum. Sonchus ludovicianus*, Nutt. Gen. Am., Vol. II., p. 125.

Obs. The plants of this genus (peculiarly North American) appear to be intermediate between Lactuca and Mulgedium. From Lactuca they differ wholly in the achenium, which, in *L. sativa* and others, is of a pale colour, and covered with longitudinal striatures. In *Lactuca perennis*, however, the striatures are few, and the achenia has a tumid margin, as in Mulgedium, but it is also furnished with a very long rostrum. From *Mulgedium* our plants differ in the form, compression, colour, and margin of the achenium, as well as in the presence of an abrupt and distinct rostrum, seldom, if ever, the length of the elliptic fruit, and of a different colour and consistence with the achenium.

## LYGODESMIA. (Don.)

Subgenus *Pleiacanthus.—Capitulum four to five-flowered. Involucrum cylindric-ovate, imbricate, of a few unequal, flat, lanceolate sepals, the external so short as to appear like a caliculum. Receptacle minute, naked. Achenium subcylindric, obtusely five-ribbed, truncated. Pappus bristly and barbellate, yellowish-white, long, and in several series.—A nearly leafless, divaricately branched, rigidly spiny perennial, with rose-red flowers in short racemes. Probably a distinct genus.

*Lygodesmia *spinosa;* stem divaricate; branchlets spinescent, microphyllous; capituli subracemose, with an irregular involucellum.

Hab. In the Rocky Mountain plains towards California. About eight to fourteen inches high. Lower leaves linear, entire, sessile, rather thick; upper leaves and those on the spiny branchlets minute, like very small bractes. Stem divaricate and spreading, the base somewhat pubescent and producing remarkably large tufts of brownish matted down; the bud scales broad ovate. Flowers pedicellate, in racemes. Every branch and twig ends in a spiny point. Larger leaves of the involucrum three or four, ovate, or ovate-lanceolate, three or four smaller ones at the base of the involucrum. Florets rose-red, deeply five-cleft at the summit. Stigmas filiform, exserted, pubescent. Pappus rigid and barbellated.

## *ERYTHREMIA.

Capitulum about ten-flowered. Involucrum subcylindric, caliculate; sepals about eight, in a single series. Receptacle naked. Achenium short, subcylindric, erostrate, ten?-striate or ten-ribbed. Pappus exceedingly copious and long, barbellate towards the base, nearly simple, and more slender above. Style and branches of the stigma exserted beyond the anthers, very hirsute, the stigmas acuminate, sublanceolate or clavellate.—Perennials, with low, few-flowered stems, naked or foliaceous towards the base, with long, linear, fleshy, entire leaves, almost all radical. Capituli with rose-red flowers. Allied to *Lygodesmia*, but with a different achenium and pappus, and a more compound capitulum; also to *Nabalus*, but with a widely different habit and different achenium.—(The name is derived from *ερυθρημα*, *redness;* in allusion to the colour of the flowers.)

*Erythremia * grandiflora;* leaves long and linear, acuminate; stem scarcely exserted beyond the leaves, forked, with two or three capituli.

Hab. In the Rocky Mountain range, on the borders of the Platte. Root large, tuberous or tap-shaped and descending; very milky and bitter. Leaves chiefly radical, or at the base of the stem, linear, entire and acuminate, glaucous or pale green, two to four inches long, half a line to a line wide, usually curved or spreading, of a thick and fleshy consistence. Stem three or four from the root crown, forked, having two or three capituli. Stem three to seven inches high: a large leaf at the first division, on the upper part of the stem shorter, or mere bractes as they approach the flower. Caliculum of about five, very short, ovate, lacerately ciliate leaflets. Involucrum of eight equal, linear-oblong, flat leaves, pubescent at the summits, somewhat obtuse, membranous on the margin, with a single faint nerve in the centre. Florets about ten, fine rose-red, and exserted beyond the involucrum, about its length, flat and five-toothed at the extremity. Style and stigmas very much exserted, and very hirsute; no awns or obscure ones at the base of the anthers. Pappus yellowish-white, in a crowded and numerous series, twice or three times the length of the achenium, the rays thicker and more serrated or barbellated towards the base. Receptacle punctate. The ripe fruit is unknown, but it appears to have about double the number of ribs there are in Lygodesmia. In *Lygodesmia juncea*, the stigmas only are exserted and slenderly filiform, and the pappus appears almost perfectly simple, or without any serratures. In both these genera, as well as in *Nabalus*, the anthers are bisetose at base.

*Erythremia aphylla;* radical leaves linear? stem dichotomous, striate, nearly leafless, with three to five capituli; stigmas clavate; anthers distinctly bisetose. *Prenanthes aphylla*, NUTT. Gen. Am., Vol. II., p. 123. *Lygodesmia? aphylla*, Decand, Vol. VII., p. 198.

HAB. Discovered on the Island of St. Marys, in Georgia, by Dr. Baldwyn. Stem twelve to eighteen inches high. Involucrum, caliculum, and florets, as well as their colour, exactly as in the preceding; the pappus, however, is scarcely more than scabrous. Lower part of the stem with one or two leaves.

## HIERACIUM. (Linn.)

HIERACIUM *marianum.* OBS. This species is very nearly allied to *H. scabrum*, but is well distinguished by the achenium, which is attenuated above, and so far rostrate as to be precisely that of Crepis!

*Hieracium barbatum*, (NUTT. in Journ. Acad. Nat. Sci. Philad., Vol. VII.) This species also inhabits the western plains as far as the Rocky Mountains. The achenium, as in the preceding, is attenuated above, but not so much as in the preceding.

*Hieracium *macranthum;* nearly smooth and green; stem erect and simple, corymbosely branched at the summit; leaves numerous, sessile, linear-lanceolate or lanceolate, incisely and irregularly serrate, acute, scabrous on the margin; peduncles pubescent; involucrum blackish, but nearly smooth; sepals lanceolate, imbricate in about three series, appressed; achenium nearly black and truncated. *H. umbellatum*, HOOKER, Flor. Bor. Am., Vol. I., p. 300.

HAB. In the forests of Oregon, near the Wahlamet. Nearly allied to *H. Canadense*, and still more nearly to *H. umbellatum.* Pubescence very sparing, stellate. The involucrum never squarrose. From two to three feet high, and sometimes robust, with the leaves narrower; when slender, with the leaves broader. Perhaps not sufficiently distinct from *H. umbellatum;* the leaves, however, are more generally serrate, and never so narrow.

*Hieracium Scouleri.*

HAB. Common near the Wahlamet. Considerably allied to some varieties of *H. Gronovii.*

*Hieracium albiflorum.*

HAB. Common round Fort Vancouver, on the Oregon, in shady woods, where it attains the height of two to three feet. The stem is rigidly erect, and smooth to a few inches from the root, where it presents long hairs like *H. Gronovii*, to which it is undoubtedly allied, and yet as certainly

*white*-flowered. Upper part of the stem almost naked, paniculate, the branchlets corymbose and few-flowered. The involucrum of about two series, and slightly bracteolate. The flowers about the size of those of *H. Gronovii.* Achenium dark brown, slender, but truncated, striate and angular, as usual. Pappus scabrous, brittle, yellowish-white. The radical and lower leaves are for the most part repandly dentate, the teeth shallow and rather distant.

*Hieracium * argutum;* leaves and base of the stem clothed with long deflected hairs; stem smooth, paniculate, the branches divaricate, with long, naked and smooth pedicels; leaves oblong, or oblong-lanceolate, all incisely and sharply dentate, acute, the cauline sessile and few; involucrum small, slightly bracteolate, smooth and blackish-green, of very few sepals in about two series; pappus *gray* and scabrous; achenium brown, and truncate as usual; flowers white?

Hab. In St. Barbara, Upper California. The only specimen I have collected is about twelve to fifteen inches high. The lower leaves three to five inches long, three-quarters to an inch wide, marked beneath with a strong mid-rib. The smoothness of all the upper part of the stem is remarkable: the achenium rather slender, and striated, as usual. The gray colour of the pappus is very peculiar.

# APPENDIX.

## Subtribe HYOSERIDEÆ. (After *Hyoseris.*)

### *CALODONTA.

Capitulum many-flowered. Involucrum imbricate in nearly a simple series, the sepals linear, subcaliculate, or bracteolate. Receptacle naked, convex. Achenium turbinate, cylindric, smooth, slightly striate. Pappus of about ten to twelve entire, slender bristles, dilated at base, with short setæ interposed between them.—A perennial, evergreen plant of the Azores, with oval, amplexicaule, pinnately nerved, elegant, incisely dentate, smooth leaves. Flowers subcorymbose, pedicellate, rather large and yellow.—(The name alludes to the elegant toothing of the leaves.)

CALODONTA **Azorica.*

HAB. In the Island of Fayal; in the Caldera and ravines adjoining. Root perennial, sending up several subdecumbent stems, about a foot long. Leaves broadish-oval and acute, amplexicaule, smooth and somewhat lucid, deeply and very elegantly serrated, almost like the leaves of a Holly, but with the serratures more numerous. Stem pubescent, somewhat tomentose. Branches spreading, one or two-flowered, the flowers terminal and fastigiate, in three or five, forming a sort of loose corymb. Involucrum nearly smooth, sepals about fifteen, linear-lanceolate, nearly all equal; bractes subulate, at the summit of the pedicels, and also forming a caliculum. Rays longer than the involucrum, five-toothed, the tube hirsute. Style and stigma exserted, nearly smooth and very slender. Achenium small, pale, testaceous, smooth, with about five broad, and almost even striatures. Pappus more than twice the length of the achenium; the hairs almost perfectly simple, dilated at the base, the dilated portion very short and somewhat lacerate: between each hair are two or three minute ones, appearing like an outer crown of pappus, but the hairs of which it consists are alternately intercalated and not external.

## Tribe EUPATORIACEÆ.

### *HELOGYNE.

Capitulum homogamous, many-flowered. Involucrum subcampanulate, imbricate; sepals foliaceous, unequal, about eight, the inner scariose. Receptacle naked. Corolla tubular, equal, glandular, the apex shortly five-toothed and closed. Branches of the stigma connivent, clavate, very large, obtusely rounded, exserted, smooth and glutinous. Achenium slenderly obconic, pentangular, smooth, with a basilar cicatrice. Pappus plumose, short, about the length of the achenium; the rays about twenty.—An annual? plant of Peru, hirsutely pubescent and glandular. Leaves alternate, cuneate-oblong, sessile, entire, or toothed at the apex. Capituli terminal, sessile. Flowers whitish, or ochroleucous. It appears to have some affinity with *Agrianthus*, but the aspect of the involucrum is that of *Apalus*. It is bitter to the taste.—(The name from *ηλος, a nail*, or *stud*, and *γυνη, a female;* in allusion to the remarkable form of the stigma.)

HELOGYNE **Apaloidea.*

HAB. In Peru, towards Arequipa; (Mr. Curson.) My specimen is only a branch, covered, as well as the leaves, with short scaly hairs, more or less glutinous: many of the leaves are entire, a few of the larger have a blunt tooth on either side, towards the summit. Capituli fastigiate, terminal, and sessile, rather large, about twelve-flowered. Involucrum of about eight leaves, four or five larger, external, oblong, or oblong-ovate, very similar to the leaves, and equally pubescent, the inner narrower and scariose or membranous, all rather obtuse. Receptacle small. Corolla slenderly and equally tubular, glandular, about twice the length of the pappus; the teeth of the border very shallow and obtuse. Anthers small and closely included, not bisetose. Stigmas very large and conspicuous, brownish and glutinous, the extremities rounded in a clavate form, each summit wider than the whole corolla.

## Tribe ASTEROIDEÆ.

### Subtribe BACCHARIDEÆ.—Division CONYZEÆ.

### *PARASTREPHIA.

Capitulum many-flowered, heterogamous; the radial five-toothed tubular florets masculine! discal florets filiform, oblique, two-toothed, feminine. Stigmas equally filiform, exserted. Involucrum imbricated in about two

series; sepals linear, membranaceous on the margin. Receptacle naked. Anthers not bisetose. Achenium compressed, linear, acute at base, villous. Pappus of the radial masculine florets double, the outer paleaceous, entire, acute and elongated, the inner of a single series of scabrous hairs; pappus of the discal florets simple, pilose and scabrous, in several series.—Apparently a small acerose leaved, evergreen shrub of Peru, resembling a Heath. Leaves linear, obtuse, narrow and short, adnately revolute to the centre. Flowers yellow? aggregated at the summit of the branches, sessile, and surrounded by the imbricated leaves.—(The name is derived from παραστρεφω, *to invert;* in allusion to the singular inversion of the florets, the masculine being external! in place of the usual order of internal.)

*Parastrephia * ericoides.*

Hab. In Peru, near Arequipa; (Mr. Curson.) In sandy soil. Leaves and stem quite similar to those of *Ceratiola ericoides;* the branches terete and tomentose; the leaves approximate, acerose, short and spreading, in about four rows, smooth and glutinous, bitter to the taste, about two lines long, and half a line wide, on the young shoots inbricated as in *Abies*. Involucrum sessile, the scales scariose on the margins, linear-oblong, nearly smooth. Pappus copious, as long as the florets, unequal and scabrous, rather rigid: the outer paleaceous pappus of the male flowers nearly half the length of the inner pilose hairs, subulate, white and shining, much longer than in any *Chrysopsis*. Achenium somewhat villous and compressed, linear-fusiform, almost exactly like that of *Aster*. In fact, our plant, notwithstanding its present arrangement, is nearly allied to *Chrysocoma* or *Lynosyris*, of which it has entirely the habit. The female florets are very slender and without any vestige of stamens; the style is also abortive in the male flowers of the ray. The florets of each kind are nearly equal in number; the female probably somewhat more numerous. (My specimens are mere sprigs, and I am, therefore unacquainted with the habit of this curious plant.)

## Tribe *SENECIONIDEÆ*.—Division Heliopsideæ.

### *MICROCHÆTA. (Lipochæta and Wollastonia, *Decand.* in part.)

Capitulum many-flowered, radiate; rays in one series, feminine. Discal florets hermaphrodite, five-toothed. Involucrum hemispherical or subcampanulate, the sepals foliaceous in two nearly equal series. Receptacle convex, paleaceous, the paleæ membranaceous and folded. Branches of the discal styles acutely acuminate, as well as those of the ray. Fertile achenia triquetrous, or obtusely quadrangular, indurated, subalated and scabrous; infertile or

tabescent, compressed and linear. Pappus a short, persistent, or somewhat deciduous crown of two or three to five unequal, or nearly equal, short, acute paleæ, longer and fewer in the infertile fruit.—Suffruticose or herbaceous plants, chiefly of the Sandwich Islands and Australasia, with opposite, ovate, dentate or incisely lobed leaves; flowers terminal, or subumbellate, peduncu-late, yellow. In habit allied to *Wedelia* and *Wollastonia.* With a different involucrum, achenium, receptacle and pappus from *Lipochæta umbellata,* with which I have compared our plants.

*Microchætal obata; β. hastulata. Lipochæta hastulata*, DECAND., Vol. V., p. 161. *Verbesina hastulata*, HOOK. and ARNOTT, Bot. Beechy, p. 87.

HAB. In the island of Ouau and Atooi. A low suffruticose plant, with the leaves more or less lobed, sometimes nearly entire. Pappus of the tabescent florets (in an early stage,) with two awns, much shorter than the fruit, connected with a membranous, lacerate, minute cup. Involucrum sub-campanulate, in almost a single series of broad ovate, leafy sepals. Rays about ten. Capituli sometimes solitary. Leaves ovate, or o[illegible]what acuminate, the base often in-cisely one or two-lobed on either side; the [illegible]te at base.

*Microchæta *lanceolata;* herbaceous; stem angular, decumbent, dichotomous; leaves shortly petiolate, lanceolate or ovate-lanceolate, scabrous and strigose, entire and very acute, distantly serrate, the serratures shallow, appressed and mucronate; uppermost leaves alternate; peduncles solitary, dichotomal or ter-minal, in twos and threes; involucrum rather flat and hemispherical; rays short and numerous.

HAB. In Ouau, near the sea. Branches long and trailing, prostrate and ascending: the leaves three-nerved, attenuated into a short petiole. Pedicels elongated, naked: sepals ovate, strigosely hirsute, ten, in about two equal series. Rays as short as the involucrum, about twenty. Paleæ of the receptacle ovate above, hirsute, often three-toothed. Fertile achenium oval, turgid, trique-trious and scabrous, with salient angles. Pappus a small persistent crown of three to five minute paleæ united in the centre of the contracted summit into a sort of cup: in the tabescent achenia (which are very numerous,) the fruit is narrow-linear, with the paleæ arising, as it were, from the angles.

*Microchæta? lavarum. Lipochæta lavarum*, DECAND., Vol. V., p. 611.

*Microchæta succulenta. Lipochæta succulenta*, DECAND., ibid.

*Microchæta *integrifolia;* herbaceous and prostrate; canescently strigose with appressed hairs; leaves approximate, spathulate-oblong, small and entire,

thick and somewhat succulent, three-nerved below; sepals oval, obtuse; peduncles solitary, one-flowered; rays short, about eight.

Hab. Near the sea, at Ouau and Atooi. Stems diffuse, procumbent, many from the same perennial tortuous root, each spreading out a foot or more, in all directions. Leaves about half an inch long, two or three lines wide, strongly nerved beneath, thick and somewhat succulent, pedicels two or three inches long. Capituli small, with the sepals obtuse. Scales of the receptacle obtuse, and hirsute at the tips as well as the florets. Fertile achenia short, roundish and angularly triquetrous, pubescent at the summit. Pappus rather deciduous, of three or four short linear, or linear-lanceolate scales of different sizes, all scarcely visible to the naked eye; tabescent achenia, which are numerous, compressed: some of the fertile ones are also often obtusely tetragonal.

*Microchæta procumbens.* *Wollastonia procumbens*, Decand., Vol. V., p. 548. Very nearly allied to *M. lanceolata*, differing principally in the coarsely toothed, sessile leaves, and smooth achenium.

*Microchæta strigulosa.* *Wollastonia strigulosa*, Decand., Vol. V., p. 548. Achenium obtuse, with three or four angles, with a coronal pappus of one to three deciduous awns.

† *Leaves connate, perfoliate; flowers paniculate, trichotomal; pappus minute.*

*Microchæta connata.* *Lipochæta connata*, Decand., Vol. V., p. 611. *Verbesina connata*, Gaudichaud, in Freycenet's Voyage, p. 464.

Hab. Ouau, near the sea. Herbaceous. Leaves three to four inches long, two to two and a half wide, broadly connate, the centre of the connate portion salient, denticulate. Flowers trichotomal; pedicels one to three-flowered. Involucrum campanulate, few-flowered, in nearly a single series of six to eight oblong-ovate leaves. Paleæ of the receptacle often three-toothed. Achenium narrow, acutely triquetrous, hispid on the angles; the pappus of three or five very minute scales, which are somewhat deciduous; infertile achenia compressed.

## *SCHIZOPHYLLUM.

Capitulum few-flowered, heterogamous. Rays feminine, two or three, bidentate; discal florets subcampanulate, five-toothed. Involucrum small, oblong, imbricate, about five-leaved. Receptacle paleaceous, the scales resembling the involucrum, embracing. Discal stigmas hirsute, with a slender conic apex. Achenia of the ray turgid, indurated, three or four-sided, obtuse and turbinate; those of the disk abortive, subquadrangular. Pappus none, or a slight vestige of an aristate crown.—An herbaceous plant of the Sandwich

# Index


Tribe I Vernoniaceae p. 283
Vernonia Lin — —
Tribe II Eupatoriaceae Lessing 284
Liatris Lin — 4
Eupatorium Lin — 286
Bulbostylis Dec -
Brickellia Elliott — 287
Nardosmia Cassini — 288
Adenocaulon Hooker 289
Tribe III Asteroideae Lessing
Corethrogyne Dec -
Aster Linn — — 290
Tripolium Nees — 295
Xylorrhiza Nuttall 297
Eucephalus Nutt 298
Dieteria Nutt 300
Sericocarpus Nees 302
Galatella Cassini 303
Diplopappus 304
Townsendia Hooker
Erigeron Lin 306
Astranthium Nutt 312
Brachyris 313
Amphiachyris Nutt
Grindelia Willd 314
Heterotheca Cassini 315
Chrysopsis Nutt
Pityopsis Nutt 317
Ericameria Nutt 318
Isocoma Nutt 320
Eriocarpum Nutt
Ammodia Nutt 321
Macronema Nutt 322
Bigelowia Decand 323
Chrysothamnus Nutt

Chrysoma Nutt p. 324
Euthamia Nutt 2d. p. 325
Solidago Lin 326
Prionopsis Nutt 329
Aplopappus Cassini "
Homopappus Nutt 330
Pyrrhocoma Hook 333
Stenotus Nutt 334
Pentachaeta Nutt 336
— Baccharis 337
— Diaperia Nutt "
Stylocline Nutt 338
Micropus Lin 339
Psilocarphus Nutt 340
Tribe IV Senecionideae 341
Silphium Lin "
Berlandiera Dec 342
Engelmannia Gray 343
— Franseria Cavan 344
Ambrosia "
— Iva 346
Bolophyta Nutt 347
— Zinnia 348
Balsamorhiza Hook 349
Wyethia Nutt 351
Heliopsis Pers. 353
Echinacea 354
Rudbeckia Cassini
Echinomeria Nutt
Encelia Adanson 356 357
Coreopsis Lin 360
Diodonta Nutt 361
Cosmidium Nutt

Leptosyne DeC. 362
Tuckermannica Nutt pag 363
Actinomeris Nutt 364
Leighia Cass
Helianthus Lin 366
Bidens Lin 368
Microdonta Nutt 369
Verbesina 370
Riddellia Nutt 371
Jolenotheca Nutt
Gaillardia 372
Baldwinia
Leptopoda Nutt
Bahia Decand 373
Hymenopappus L'Herit 374
Chaenactis Dec 375
Macrocarphus Nutt 376
Sylesia Nutt 377
Actinella Pers. 378
Burielia Dec 380
Stilomeris Nutt 381
Dichaeta Nutt 383
Lasthenia Cass.
Helenium Lin 384
Stilonella Nutt 385
Madia Molini 386
Madaria Dec
Madorella Nutt 387
Madariopsis Nutt
Anisocarpus Nutt 388
Harpaecarpus Nutt 389
Amida Nutt 390
Lagophylla Nutt
Hartmannia Dec 391
Osmadenia Nutt

Madaroglossa
— Achillea L
— Eglettes
Venegasia Dec
— Aromia Nutt
Lepidanthus Nutt
— Artemisia Nutt
Tanacetum Lessing
Sphaeromeria Nutt
Soliva Ruiz & Pavon
Gnaphalium Lin
Filago Tournef.
Antennaria R. Br.
Arnica Lin
Senecio Lessing
Crocidium Hooker
Tetradymia Dec.
Lagothamnus Nutt
— Picrothamnus Nutt

Tribe V Cynareae
Carduus Gaertner
Cirsium Tournefort
Tribe VI Mutisiaceae Less.
Cursonia Nutt
Polyachyrus Leg.
Tribe VIII. Cichoraceae
Apogon DC.
Uropappus Nutt
Scorzonella Nutt
Trixia Schreber
— Stephanomeria Nutt
Rafinesquia Nutt
— Pyrrhopappus Dec.
Taraxacum Hall
Macrorhynchus Less.
Cryptopleura Cryptopleura Nutt

Stylopappus Nutt 431
Troximon Nutt 433
Malacomeris Nutt 435
Barkhausia Mönch
Crepidium Nutt
Crepis Mönch 436
Psilochenia Nutt 437
Sonchus Tournef 438
Andryala
Leptoseris Nutt
Leucoseris Nutt 439
Mulgedium Cass 441
Galatheanium Nutt 442
Lygodesmia Don 444
Erythremia Nutt 445
Hieracium Lin 446


Appendix


Calodonta Nutt 448
Helogyne Nutt 449
Parastrephia Nutt
Microrhaeta Nutt 450
Schizophyllum Nutt 453

Islands, with diffusely trailing, oppositely branching, quadrangular stems, and opposite, pseudobipinnate leaves. Flowers yellow, usually terminal in threes, nearly sessile.—(The name from σχιζω, *to dissect*, and φυλλον, *a leaf;* the leaves being remarkably dissected.)

*Schizophyllum * micranthum.*

Hab. The island of Atooi, in shady woods, near Kolao. A perennial plant with prostrate or trailing branches, extending over two or three feet of surface. The whole plant sparingly strigose, green. Leaves petiolate, deeply bipinnately dissected, the segments simple, cuneate-oblong, or two or three-lobed, the rachis set with small simple segments. Flowers small and very inconspicuous, terminal, on very short pedicels. Involucrum strigose, the leaves foliaceous, lanceolate, acute, very few, but imbricated, scarcely distinguishable from the paleæ of the receptacle. Rays two or three, pale yellow, oval, scarcely as long as the involucrum, with a smooth exserted style and stigma, and, as well as the florets of the disk, possessing a distinct tube. Anthers dark brown; teeth of the florets reflected. Achenium truncated and pubescent at the summit, the angles tubercular, the base also obtuse; tabescent achenia linear-obovate, also somewhat tubercular and quadrangular. Considerably allied to the preceding genus, but very distinct in habit, and almost wholly divested of pappus.